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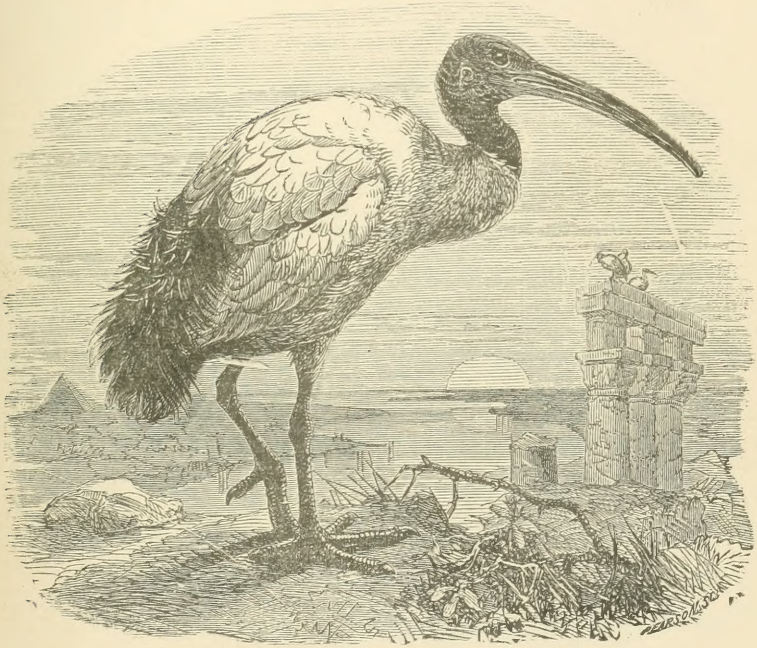
EDITED BY
PHILIP LUTLEY SCLATER, D.Sc., F.R.S.,
AND
A. H. EVANS, M.A., F.Z.S.



VOL. V. 1905.

EIGHTH SERIES.

Quam magnificata sunt opera tua, Domine.

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PREFACE.

The Editors regret the slight delay that has taken place in the issue of the final number of this Journal for the present year, owing to their absence in South Africa at the Meetings of the British Association for the Advancement of Science. Had not Mr. Howard Saunders kindly proffered his welcome assistance, which was gratefully accepted, the delay might have been still more serious, as the Editors could not return to England before October 6th.

In concluding the fifth volume of the Eighth Series of 'The Ibis,' the Editors wish to thank all their contributors for the valuable articles with which they have been favoured. Amongst these they may venture to call the special attention of Ornithologists to the notes on the Birds of Khartoum written by Mr. A. L. Butler, which contain much information on the times of arrival and departure of the European migrants in that part of Africa. This knowledge, together with that recently acquired in Cape Colony and other parts of the continent (although much more still remains to be done), may enable us in the future to trace more exactly the main routes by which migrants travel and the countries in which they pass the winter-months.

P. L. S.
A. H. E.

3 Hanover Square,
London, W.,
October 10th, 1905.

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ERRATA.

Page 321, line 1, *for* Lagonosticta nigricollis Heugl. *read* Estrilda larvata Rüpp.

Page 382, line 10, *for* Rhynchops flaviventris Vieill. *read* Rhynchops flavirostris Vieill.

THE IBIS.

EIGHTH SERIES.

No. XVII. JANUARY 1905.

I.—*On the Systematic Position of* Zeledonia coronata, *with some Observations on the Position of the* Turdidæ. By W. P. Pycraft, F.Z.S., A.L.S., &c.

(Plates I. & II.)

I. Introductory.

Some time ago Dr. R. Bowdler Sharpe placed in my hands a spirit-specimen of *Zeledonia coronata*, requesting me to endeavour to determine, so far as was possible, the true position of that bird in the system. It was procured for the purpose of this investigation by Dr. F. DuCane Godman, F.R.S., and to him and to Dr. Sharpe I am greatly indebted for many valuable suggestions. Furthermore, I have to record my hearty thanks to Dr. P. L. Sclater, F.R.S., who has throughout taken great interest in the progress of the work and has helped me in many ways.

Zeledonia coronata (Plate I.) is a small bird presenting many very puzzling characteristics. It was first described in 1888 by Prof. Robert Ridgway *, who, however, on account of its curious appearance, confined himself to a diagnosis of the plumage. Concerning the question of affinity, he remarked: "This remarkable new genus is so peculiar in its characters that I am in much doubt as to which family it belongs. The very short rounded wing with long first primary, full and closely appressed loral feathers, and soft texture of the plumage in general strongly suggest the genus *Scytalopus,* and I was at first inclined to refer it to the Pteroptochidæ, to which *Scytalopus* belongs; the coloration of the head strongly suggests that of *Basileuterus coronatus,* and the loosely webbed rectrices with finely acuminate points, as well as the loosely webbed remiges, slender bill, and long-booted tarsi with sharp posterior edge, remind me of *Catharus gracilirostris.* . . . . The general resemblance to the genus *Xenicus,* of New Zealand, is very remarkable, *X. longipes* being of nearly the same size and proportions. . . . . *Xenicus* is now referred to the *Clamatores*; but whether *Zeledonia* is a related form belonging to the same suborder or an aberrant Oscinine type, cannot, probably, be determined without examination of its anatomy."

---

* Proc. U.S. Nat. Mus. vol. xi. p. 537 (1888).

Soon after this account was written, skeletons of *Zeledonia coronata* and *Catharus gracilirostris* were submitted by Prof. Ridgway to Mr. F. A. Lucas. The result of the investigations of that gentleman* seemed to shew that *Zeledonia* and *Catharus* were *not* related. Further particulars were promised, but Mr. Lucas is a very busy man and doubtless has never had an opportunity of completing his study of this very interesting bird.

A careful comparison of *Zeledonia* with *Basileuterus, Xenicus,* and *Scytalopus* made by Messrs. Salvin and Godman† only served to shew that no relationship with any of these forms was probable, and the conclusion was arrived at that "for the present the position of this genus must remain in abeyance pending a full examination of its internal structure."

Here, then, the matter rested until the present writer reopened the question. In a short note, published in the

---

* Proc. U.S. Nat. Mus. xi. p. 538 (footnote).

† Biologia Centr.-Amer., Aves, vol. ii. 1888–97, p. 248.

'Bulletin of the British Ornithologists' Club'*, he was enabled to state definitely that *Zeledonia* could have nothing to do with *Xenicus,* inasmuch as it had a typical Oscinine syrinx. Acting on this, Dr. Sharpe, in vol. iv. (p. 183) of his 'Hand-list,' placed *Zeledonia* in the subfamily Sialiinæ, which contains the genera *Catharus, Zeledonia, Sialia, Grandala,* and *Ridgwayia.*

It was to decide, if possible, whether the position assigned to *Zeledonia* by Dr. Sharpe, on the evidence of external characters, was at least approximately correct that I was asked to continue the work which I had commenced in 1900. Although, as the sequel will shew, I have been able to confirm Dr. Sharpe's decision in this matter, several points still remain to be settled, while a great number of new questions have arisen. All of these, unfortunately, must for the present remain in abeyance, partly on account of the pressure of other work and partly from lack of material. The latter circumstance has hampered me much during the preparation of the present paper—how much may perhaps be gathered from the fact that I had but a single damaged specimen in spirits and a few skins of *Zeledonia*, and two skeletons of *Sialia. Grandala, Ridgwayia,* and *Catharus* (the remaining genera of the subfamily in which *Zeledonia* has been placed) I have only been able to study from skins, and these have proved to be of no help whatever in the matter.

II. PTERYLOGRAPHY.

Pteryla capitis (text-fig. 1, *pt.cap.*, p. 4).—This is interrupted only by a small bare space (*apt.cap.*), arising above the external aperture of the ear, slightly above the level of the posterior canthus of the eye, and passing backwards and downwards and finally forwards to end below this aperture at the base of the mandible. The interramal space is feebly developed.

At the gape are a few short weak rictal bristles.

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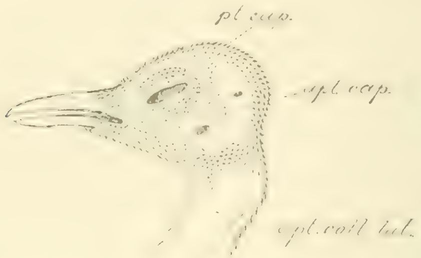
* Bull. B. O. C. xi. p. 12 (1900).

The nostrils are covered by a membranous operculum having the form of a triangle. So far this operculum appears to be unique.

Pt. colli dorsalis (text-fig. 2, *pt.coll.d.*, p. 5).—This tract is very narrow and passes down into the

Pt. spinalis (text-fig. 2, *pt.sp.*, p. 5).—The only feature of interest about this tract is the broad, more or less shield-shaped expansion which occurs over the pre-iliac (lumbar) region. This contracts again in the space bounded by the antitrochanters of the pelvis, and passes down from this point to the uropygium as a very narrow band.

Text-fig. 1.



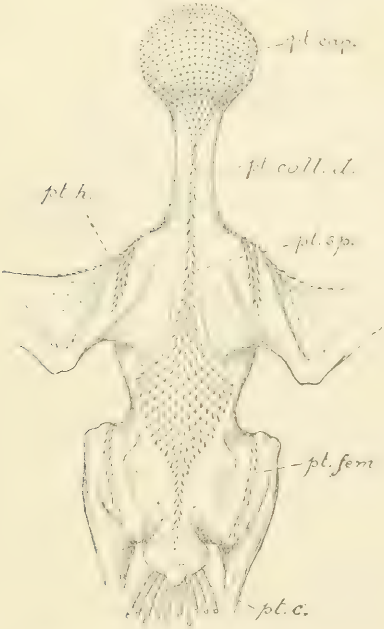
Head of *Zeledonia coronata*, shewing the form of the pteryla capitis and the apterion extending from the base of the lower jaw upwards. *apt.cap.* = apterion capitis; *apt.coll.lat.* = apterion colli laterale; *pt.cap.* = pteryla capitis.

Pt. caudalis (text-fig. 2, *pt.c.*, p. 5).—There are 10 rectrices. The shafts of these feathers are continued beyond the vanes to form minute filiform processes. The length of the whole tail is about equal to the combined length of the tarso-metatarsus and outer toe—minus its claw. The filiform extensions of the shafts of the tail-feathers are also distinctly traceable in *Grandala cœlicolor*.

Pt. colli ventralis.—Contracting at the throat to run down the middle line of the neck, this tract divides high up, sending backwards two relatively broad bands to pass at the base of the neck into the

Pt. ventralis.—This, at its origin, and for some way down, is of considerable breadth, but near the lower third of the breast the outer border of the tract becomes suddenly emarginate, and is continued forwards from this point as a narrow band to terminate in the region of the cloaca. Whether the right and left portions of this tract join in the middle line in front of the cloaca I am unable to say, the specimen from which the description was taken having been too much damaged to settle this point.

Text-fig. 2.



Dorsal aspect of *Zeledonia coronata*, prepared to shew the form of the pterylæ. *pt.cap.*=pteryla capitis; *pt.c.*=pteryla caudalis; *pt.coll.d.* =pteryla colli dorsalis; *pt.fem.*=pteryla femoralis; *pt.h*=pteryla humeralis; *pt.sp.*=pteryla spinalis.

Pt. femoralis (text-fig. 2, *pt.fem.*).—This tract is well defined, crossing the femur near its upper third and running backwards to the base of the oil-gland.

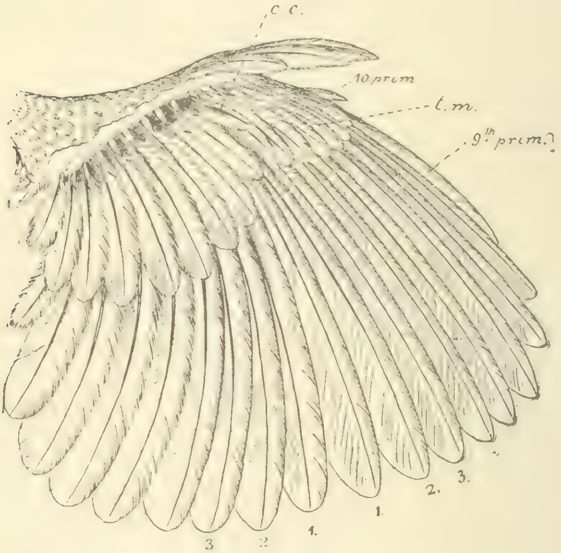
Pt. cruralis.—Sparsely feathered and not well defined.

Pt. humeralis (text-fig. 2, *pt.h.*, p. 5).—This tract, perhaps rather narrower than usual, calls for no special remark.

Pt. alaris (text-fig. 3).

Metacarpo-digital remiges or primaries.—These are actually 10 in number, but the 10th remex is reduced to the merest vestige and is even smaller than its covert. According to the usual ornithological custom, this wing would be considered to have but 9 primaries.

Text-fig. 3.



Right wing of *Zeledonia coronata*, dorsal surface, shewing the relative lengths of the primaries. 1, 2, 3–9, 10=primaries 1–10; 1, 2, 3= secondaries; *c.c.*=carpal covert; *t.m.*=tectrices majores.

Reckoning from the wrist outwards, the first 6 remiges may be regarded as subequal in length, the remaining 3 being remarkably shorter, the 9th especially so. The 10th remex, as I have just remarked, is practically non-existent. There is no diastema between the primary and secondary remiges.

The great reduction which has taken place in the length of the outermost primaries is to be attributed to the comparative disuse of the wings. Furthermore, this reduction has given to the wing a peculiarly rounded form, the primaries passing insensibly into the secondaries.

Cubital remiges or secondaries.—These are 9 in number, the 9th being but little longer than its covert. The wing, of course, is eutaxic. These remiges decrease in length rapidly from without inwards.

A peculiar feature about the remiges of the wing is their extreme breadth, which would be just as noticeable even had no reduction in the length taken place, as in the case of the outer primaries. This feature also appears to be correlated with the disuse of the wings.

Tectrices : upper surface :—

T. majores.—Those of the primaries are small and rapidly decrease in size from within outwards (text-fig. 3, *t.m.*, p. 6). The secondary series is normally developed. The transition to shorter coverts is somewhat abrupt, commencing with the covert of the 7th remex. The 9th remex and its covert are barely distinguishable from one another.

The remaining coverts of the upper surface present the usual Passerine arrangement and call for no comment.

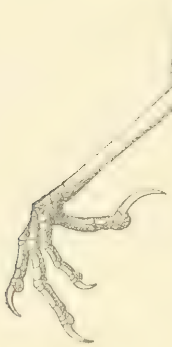
The coverts of the under surface are also of the normal type and therefore need no description here.

Plumulæ or *down-feathers* occur very sparingly on the trunk.

Rhamphotheca (Pl. II. fig. 11).—The only feature that requires special notice here is the form of the external nostril. This appears, so far, to be unique, inasmuch as it is protected by a membranous fold or operculum, the free edge of which may be described as triangular ; the apex of the angle overhangs the mouth of the narial aperture, which is still further increased by the extension backwards of the inner angle of the base of the triangle.

Podotheca (text-fig. 4, p. 8).—This is a complex formed by the fusion of several distinct elements. The acrotarsium is covered by a single shield extending from the proximal end of the tarso-metatarsus to within a short distance of its extreme distal end, which is protected by three small scales, the last overlapping the toes. The inner edge of the large scute runs along near the middle line of the inner side of the shaft, while the outer edge extends as far as the middle line of the planta; the space between the two edges is filled up by a long plate extending the whole length of the planta and inner side of the tarso-metatarsal shaft. The large sheath covering the acrotarsium, when carefully examined, is found to be formed by a fusion of four separate scutes, traces of which can be distinctly seen.

Text-fig. 4.



Left foot of *Zeledonia coronata*, shewing the podotheca. Only the faintest traces remain of the originally separate scales which compose the main sheath of the acrotarsium.

Discretion must be used in employing the fusion or non-fusion of the scales of the acrotarsium as a character of systematic value. Even in different species of the same genus I find that great variation obtains. Age doubtless has much to do with the matter, the traces of scutes, where fusion of an originally separate series has taken place, being often visible only in young birds and absent in adults. But let it be distinctly understood that I do not mean to decry the value of the squamation of the leg as an aid in distinguishing members of different "Families" of Passeres. There it is often very useful. Thus, to take a case at random: the squamation of the acrotarsium of the Sturnidæ differs distinctly from that in the Turdidæ, and can be distinguished even in the embryo. Even where fusion is taking place it would always be possible to distinguish the acrotarsium of the one group from that of the other by counting the number of disappearing elements.

Planta.—By the backward extension of the outer border of the acrotarsial shield this forms a knife-like edge. The inner side of this is clothed by a long narrow plate.

Claws.—These are not conspicuously large, that on the hallux being the largest.

General Remarks on the Pterylosis of Zeledonia *and of the* Turdidæ *in general.*

In its pterylological characters *Zeledonia*, so far as I have been able to discover, agrees more nearly with the Turdidæ than with any other group.

But what are, precisely, the pterylological characters of the Turdidæ? Unfortunately, owing to lack of material, I cannot at present say, nor can I find any scientific contribution to this subject. So much, however, seems apparent, that the Turdidæ, as a group, present certain common characters, which may be regarded as distinctly Turdine. It is possible, however, that these distinctions, which are of a somewhat subtle description, will break down when the pterylosis of the Timeliidæ (revised), Pycnonotidæ, Alaudidæ, Motacillidæ, Mniotiltidæ, and Sylviidæ—of Dr. Sharpe's 'Hand-list'—come to be studied. These several "families" will, I believe, prove to be more closely related than has been supposed.

Among the Turdidæ the spinal tract is found to assume two distinct forms—(α) in which *pteryla spinalis* runs down the back as a broad band, and (β) where it expands in the lumbar region into a diamond-shaped patch.

Since, however, the same features obtain in other families of Passeres, the form of this tract can have but a limited value for the systematist. But it promises to be of some use in determining the generic distinctness or otherwise of allied species. To take a case in point, *Merula merula* differs from our native species of *Turdus* in that in the former the tract has the saddle-shaped expansion, while in the latter it is straight. The Ruticillinæ, Saxicolinæ, and Sialiinæ of Dr. Sharpe's 'Hand-list' appear to possess the saddle-shaped type. I have, however, examined very few of the genera of these subfamilies, though among these I have discovered certain small differences which, at the present time, appear to be of uncertain value. Thus *Zeledonia* and *Cossypha*—genera which belong apparently to two distinct subfamilies—agree in that the broad dorsal saddle contracts over the pre-ilia to form a narrow band running evenly to the oil-gland. *Saxicola* appears to be peculiar in that the band immediately behind the saddle is much broader than in *Zeledonia,* and behind the level of a line passing through the antitrochanters suddenly expands to form a roughly quadrangular patch extending backwards to the oil-gland. But as no less than forty-seven species of *Saxicola* are recognised by Dr. Sharpe, it seems doubtful whether a detail like this will persist throughout the whole of them—supposing them to be really members of the genus. I have only examined eight.

Daulias luscinia appears to be intermediate in the matter of this lumbar saddle between *Saxicola* and *Zeledonia,* the region bounded by the antitrochanters being very broad and expanding into a still broader caudal patch, which, however, is narrower than in *Saxicola.*

In the possession of the semilunar *apterion capitis, Zeledonia* appears to be peculiar among the Turdidæ.

If any proof were needed as to the inutility, for the purposes of classification, of the number of the primaries, it could be abundantly furnished by the Turdidæ. This character, it will be remembered, has been used by several workers in systematic ornithology; and especially by Wallace*, who, indeed, made it the basis of a scheme for the classification of the Passeres.

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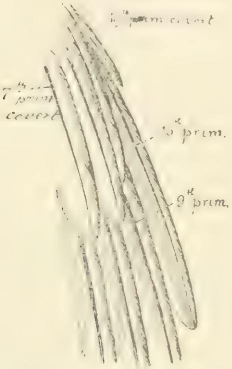
* Wallace, A. R., "On the Arrangement of the Families constituting the Order Passeres," Ibis, 1874, p. 406.

Zeledonia would be reckoned, by those who follow this system, as one of the 9-primaried Passeres, since only the merest vestige of the 10th remex remains (text-fig. 3, p. 6).

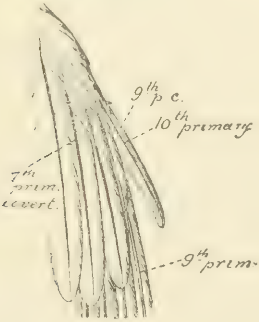
On the other hand, in *Cossypha* (text-fig. 5) and *Saxicola* (text-fig. 6), and in *Cisticola*, one of the Sylviidæ—which group, I hope to be able to shew, is also to be reckoned among the allies of the Thrushes,—the 10th remex is a relatively long feather.

Text-fig. 5.


prim covert
7th prim covert
10th prim.
9th prim.

Portion of the primary region of the wing of *Cossypha*, to shew the great length of the 10th primary.

Text-fig. 6.


9th p c.
10th primary
7th prim. covert.
9th prim.

Portion of the wing of *Saxicola*, to shew the relatively large 10th primary.

In *Saxicola* the 10th remex is longer than the covert of the 9th, but shorter than the remainder of the primary-coverts. In *Cossypha* this remex is nearly as long as the 4th primary—reckoning from the wrist—and markedly longer than the remaining primary-coverts. The covert of the 10th remex, by the way, is vestigial both in *Cossypha* and *Saxicola*. In *Cisticola* the coverts of both the 9th and 10th remiges are vestigial. In *Turdus* the 10th remex is longer than the series of primary-coverts; its covert is wanting, whilst the covert of the 9th remex is extremely reduced.

The carpal covert in *Zeledonia*, *Cossypha*, *Saxicola*, and *Erithacus* is large, in *Cisticola* small. There is no carpal remex in *Zeledonia*.

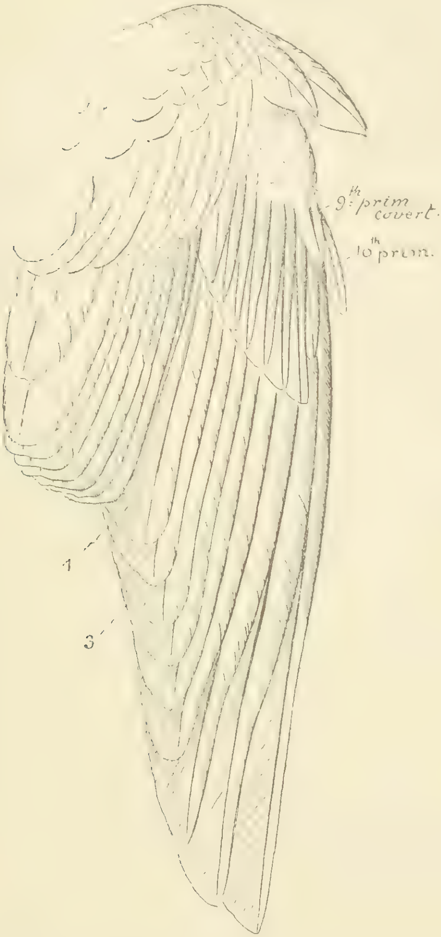
The general form of the extended wing is rounded in *Zeledonia*; and therein it contrasts strongly with the wings of *Saxicola* or *Cossypha*, for example. But this is a character utterly valueless for systematic purposes. The shortening and rounding of the wing apparently follows upon a lessened use of this member or is brought about by adaptation to flight in thick woods or undergrowth.

The great range of variability which is to be met with even among those members of the group which are admittedly and undoubtedly closely allied, should be regarded as good evidence in favour of this contention—that the form of the wing is correlated with the habits of the bird, and is therefore of no value for systematic purposes.

Grandala cœlicolor affords a good illustration of this. A close ally of *Zeledonia*, an indubitable Thrush, yet its wing recalls strongly that of the Swallows—or of *Artamus*, for example. The primaries are of great length, and the 9th is the longest. The 10th is reduced to a vestigial condition, and although, even when thus reduced, it is longer than the covert of the 9th remex, it is several times shorter than others of the primary-coverts. The covert of the 10th remex has disappeared entirely.

The peculiar shape of this wing suggests a habit of flight resembling that of the forms with which it is compared.

Text-fig. 7.



Right wing of *Grandala cœlicolor,* to shew the great length of the 9th primary and the vestige of the 10th primary and of the 9th primary-covert.

III. Myology.

Nothing of importance appears to be derivable from the study of the myology of *Zeledonia.* Typically Passerine, the only features that call for comment are those which concern the wing- and thigh-muscles.

Whilst in *Erithacus* and *Turdus* the *tensor patagii brevis* sends off a very delicate slip to the patagial fold, and ultimately, by a few extremely delicate fibres, to the *tensor patagii longus*, *Zeledonia*, *Saxicola*, and *Cossypha* only present the merest vestiges of this slip.

The *latissimus dorsi posterior* is wanting in *Zeledonia*, but occurs as a strap-shaped muscle in *Saxicola*, *Cossypha*, and *Turdus*. Since this muscle in undoubtedly Timeliine forms appears as a triangular sheet, filling up the V-shaped space between its anterior border and the hinder border of the *latissimus dorsi anterior*, it would appear that the strap-shaped form which it presents in *Saxicola* is a degenerate condition preceding extinction.

The *latissimus dorsi anterior* is in all the forms just described a narrow strap-shaped muscle, broadest in *Saxicola*.

Of the thigh-muscles the only one which offers any features of interest is the *femoro-caudal*, which, in *Zeledonia*, is very slender and is inserted by a relatively broad and long sheet of tendon. In *Erithacus*, *Cossypha*, *Merula*, and *Cisticola* the muscle continues fleshy almost to the point of insertion. *Saxicola*, as well as *Crateropus* among the Timeliidæ, agree with *Zeledonia* in presenting a long tendinous insertion.

Muscles of the Syrinx.

Since it has been suggested that *Zeledonia* might prove to be an ally of *Xenicus*, one of the Anisomyodean Passeres, it is necessary to refer to these muscles and to remark that they are typically Oscinine.

IV. OSTEOLOGY.

Careful study of the skull, sternum, and shoulder-girdle of *Zeledonia* leaves little doubt but that this bird must be regarded as one of the Turdidæ. The skull, however, presents one or two relatively important features, which may, perhaps, be regarded as primitive characters.

The Skull (Pl. II. figs. 7, 9).—The Thrush-like characters of the skull are to be found in the form of the tympanic cavity and of the palate. These points of common resemblance, it must be remarked, by no means leap to the eyes on a first examination, nevertheless they are real. They seem to indicate that *Zeledonia* should be regarded as a primitive Thrush, in the wide sense of the word; but to this point we shall return later.

The tympanic cavity in *Zeledonia* is extremely shallow. Bounded posteriorly by the conch-like tympanic wing of the exoccipital (Pl. II. fig. 9, *t.o.w.*), it passes upwards into the squamosal prominence to terminate some distance above the squamosal head of the quadrate in the form of a low hook-shaped ridge. The termination of this hook, which, it must be remembered, is the termination of the free edge of the tympanic cavity, lies behind and beneath the base of a conical process of the alisphenoid. The articular surface for the squamosal head of the quadrate, it should be observed, lies, relatively, remote both from this alisphenoid process and the termination of the free edge of the tympanic wing. Another point of some importance to be noted here is the fact that, after the removal of the tympanic membrane, the aperture of the *recessus tympanicus posterior* will be found only after a careful examination in the form of a minute foramen which leads into a small chamber formed by the absorption of the cancellated tissue around the semicircular canals, and is strictly confined to this region. The aperture of the *recessus tympanicus anterior*, though small, is quite normal in position.

Turning now to the palate, the chief point of interest will be found in the maxillo-palatine processes, here reduced to slender stylets of bone, the free ends of which are bent at a sharp angle so as to lie parallel with the vomer and on either side thereof (Pl. II. fig. 7, *mx.p.*).

In the lateral view of the skull it will be noted that the postorbital process is barely visible (Pl. II. fig. 9, *p.o.p.*), whilst the interorbital septum is much fenestrated, only a very slender bar of bone remaining, which runs forwards from the membranous orbito-sphenoids to join a small pillar-like remnant of the septum that remains at the anterior wall of the orbit.

The anteorbital plates are large and have entirely replaced the lachrymal, of which no trace remains (Pl II. fig. 9, *a.p.*). In a much-damaged skull of *Grandala cœlicolor* I find the lachrymal represented by a minute scale.

The palato-pterygoid articulation is formed, as in the typical Passeres, by the extension of the distal end of the pterygoid into a slipper-shaped plate embracing the parasphenoidal rostrum. The anterior edge of the plate is opposed to one side of the triangular plate of bone which rises up from the dorsal surface of the palatine so as to be closely applied to the rostrum (Pl. II. fig. 9, *h.pt.*). This triangular plate, though now forming part of the palatine, is evidently the remnant of the hemipterygoid. *Sialia*, *Grandala*, and *Erithacus* resemble *Zeledonia* in the presence of this triangular vestige of the hemipterygoid, but in the genera *Turdus* and *Merula*, for example, no such vestige remains, and the pterygoid articulates with the palatine by the approximation of two oblique and almost linear glenoid surfaces, that afforded by the palatine being developed upon the hinder end of its distal border (Pl. II. fig. 12).

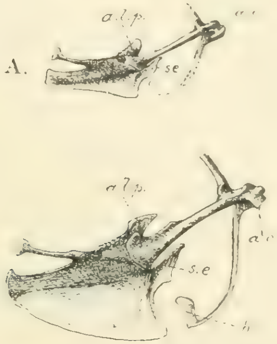
The Sternum and Shoulder-girdle (text-fig. 8, p. 17).—The sternum of *Zeledonia* affords indubitable evidence that this bird possesses but limited powers of flight, inasmuch as the keel, relatively to the size of the *corpus sterni*, is extremely small. Compared with the keel of *Sialia*, *Erithacus*, *Pratincola*, *Phylloscopus*, for example, the extent of the reduction which has taken place is very striking. While in *Zeledonia* its free edge is slightly *concave*, in the several forms just referred to it is markedly *convex*. Again, in *Zeledonia* the keel decreases in depth rapidly from before backwards, so that for about one-third of its length it is little more than a median ridge of bone. In any of the forms compared above it will be noticed that the keel is continued backwards to the extreme end of the sternal plate, there to fan out into a V-shaped plate.

The peculiar shape of the wing further strongly supports the view that this bird has gone far on the road to flightlessness. In this connexion it is interesting to note that the reduction of the wing-area correlated with this lack of use has not taken place by the shortening of *all* the remiges, but only of the outer primaries. This method of wing-reduction appears to be the invariable rule in the early stages of flightlessness.

Five ribs articulate with the sternum, and all are attached to the anterior lateral process—as appears to be the rule among the Passeres. These processes in *Zeledonia* are relatively short, as also is the bifurcate *spina externa*.

The relative length of the anterior lateral processes and the spina externa will possibly prove of some use in defining the smaller groups of Passeres, though these proportions must always be rigorously scrutinized, since they may vary individually with the power of flight. But *Turdus, Pratincola,* and *Phylloscopus,* for example, present so many distinct generic types, though the differences are small.

Text-fig. 8.



A.—Sternum and shoulder-girdle of *Zeledonia coronata*, shewing the degenerate condition of the keel and the long and slender coracoids. *a.l.p.*=anterior lateral process; *a.c.*=acrocoracoid; *s.e.*=spina externa.

B.—Sternum and shoulder-girdle of *Sialia wilsoni*. Note the deep keel, the large hypocleideum, and strong coracoid. Additional letter: *h.*=hypocleideum.

The coracoid in *Zeledonia* shews, like the keel of the sternum, evidence of degeneration. Relatively to the *corpus sterni* it is longer than in *Sialia*; this is due to the reduction of the sternum. Further, it has lost the strong external lateral ridge which runs forward from the base to the middle of the shaft in such genera as *Turdus, Pratincola,* and *Erithacus,* for example. It differs, too, from the coracoid of *Sialia,* firstly, in that the width at the base is greatly increased in *Sialia* by the development of a large lateral plate formed by the expansion of the external angle of the base of the shaft; and, secondly, in that, while in *Sialia* the acrocoracoid (fig. 8 B, *a.c.*, p. 17) is well marked, and at its free end turns inwards and downwards to form a hammer-shaped process grooved on its inner surface for the furcula, in *Zeledonia* this region of the coracoid is much reduced, and has the hammer-shaped process reduced to a hook-shaped, which is not grooved for the furcula on its inner side.

The furcula was much damaged. From the fragments that I have been able to dissect out it can be seen that the hypocleideum was extremely reduced.

General Remarks on the Osteological Characters of Zeledonia *and the* Turdidæ.

That in general conformation the skull of *Zeledonia* resembles that of the Turdidæ more closely than that of any other family is clear. Furthermore, it would seem that among the Turdidæ *Zeledonia* must take its place with or near the Sialiinæ: the likeness which the skull presents to those of *Sialia* and *Grandala,* at least, seems to support this view. Unfortunately I have but a damaged skull of *Grandala cœlicolor,* and this is too much broken to admit of a comparison of the tympanic region.

Probably these small forms, and with them the equally diminutive members of the Ruticillinæ and Saxicolinæ, should be regarded as more primitive than the typical Thrushes, such as *Geocichla, Turdus, Merula,* &c. The forms of the external auditory meatus (tympanic cavity) and of the palato-pterygoid articulation both point in this direction. In *Zeledonia* the tympanic cavity seems to be of a very simple type, and this, coupled with the large size of the hemipterygoid element of the palatine and the non-pneumaticity of the skull, would seem to indicate that *Zeledonia* is one of the lowest members of the Turdiformes.

Of the larger Thrushes, *Geocichla* seems undoubtedly one to take a very low position. This is borne out partly by the form of the tympanic cavity (Pl. II. fig. 2), which is intermediate in character between that of *Sialia* and *Turdus*, and partly by the presence of vestigial basipterygoid processes. The presence of the latter is somewhat remarkable (Pl. II. fig. 6). Unfortunately I have but one skull of the genus *Geocichla* — *G. monticola.* But traces of these processes probably occur in other species of this genus. Few other Passerines retain any vestige of these buttresses.

The Tympanic Cavity.—The study of the free edge of the tympanic cavity reveals some curiously interesting facts. The simplest condition, perhaps, which this region presents among the Passeriformes is to be met with in *Menura* (Pl. II. fig. 5). Here the free edge of the lateral occipital wing meets, at a sharp angle, a sinuous ridge running from the squamosal head of the quadrate. To the inner edge of the lip of this ridge the tympanic membrane is attached, and stretching across becomes attached to the lateral occipital wing very near its free edge, so that the tympanum lies very close to the surface.

This type appears in a large number of widely different groups, and the fact may be regarded as an additional indication of its primitive character.

The Turdiformes appear to have departed from this type along two different lines.

The ground-type of both forms appears to be represented in *Sialia* (Pl. II. fig. 3). In this genus the line formed by the lateral occipital wing, after meeting the ridge described in *Menura*, which runs from the squamosal head of the quadrate, is continued upwards and forwards, then sharply downwards on to the squamosal process in the form of a low and barely perceptible ridge.

In the Ruticillinæ the free edge of the lateral occipital wing is continued upwards and forwards in the form of a strong ridge to the postorbital process, so that the ridge forming the anterior border of the meatus in *Menura* now becomes overhung by a sort of cave. This feature is still more marked in *Daulias luscinia* (Pl. II. fig. 4) and *Erithacus rubecula.*

Pratincola and *Saxicola* also belong to this type. So also, it is significant to note, do *Phylloscopus* and *Cisticola,* and probably the Warblers generally.

The tympanic region of the skull in *Zeledonia* (Pl. II. fig. 9) is undoubtedly specialized in one respect, since the *processus zygomaticus squamosi* has apparently been replaced by a process of similar size furnished by the alisphenoid. Pneumatic tissue is practically wanting. Indeed the peculiar features of this region of the skull appear to have resulted from a modification of the type of tympanic region in *Sialia,* not as it is in adult life, but as it appears during its earlier stages of development.

As I have already remarked, the free edge of the lateral occipital wing, which is relatively longer than in *Menura,* terminates in a low ridge above the squamosal head of the quadrate, leaving a notch between itself and what appears to correspond to the zygomatic process, which, it is to be especially noticed, is some distance from the squamosal articulation of the quadrate. In this respect *Zeledonia* is quite remarkable. In *Cossypha* and *Geocichla* the free edge of the lateral occipital is continued upwards and forwards on to the zygomatic process (Pl. II. fig. 2, *l.o.w.*) in the form of a strong sharp ridge overhanging the bony ridge which formed the external boundary of the meatus in *Menura.* From this the passage to the more specialized form is easy.

In *Merula* (Pl. II. fig. 1, *l.o.w.*) the lateral occipital wing passes upwards into what corresponds to the overhanging ridge in *Geocichla.* But both the occipital wing and the ridge continued therefrom are immensely developed, so as to form a spacious chamber around the tympanic membrane. Externally this chamber has the form of a bulla. The incipient stages in the formation of this bulla are easily traceable in *Zeledonia.*

The skulls of *Anthus* and *Motacilla,* it should be remembered, resemble *Sialia* in the form of the tympanic cavity.

The three great air-sinuses of the cranium are not very largely developed in any of the Passeres.

The *recessus tympanicus anterior* appears to be invariably present and well defined; but in the small Turdiform skulls—e. g. *Sialia, Pratincola*—the superior and posterior recesses are ill-defined, passing insensibly into the general diploid tissue of the skull.

In *Zeledonia* this diploid tissue is extremely reduced and the superior tympanic recess is wanting. The posterior is present, however, but is very small; it opens externally by a small foramen above the fenestral recess. Only among Laniine skulls have I noticed a similar lack of diploid tissue. But even there some vestiges of the superior recess are to be found. These are present in the form of a number of small foramina arranged in a semicircle, leading from the articular surface for the squamosal head of the quadrate backwards and downwards to the top of the fenestral recess.

In the larger Thrushes, e. g. *Merula,* the superior and posterior recesses are moderately large. The aperture of the former lies between the squamosal and the articular surfaces of the quadrate, while the entrance to the latter is through a cribriform plate above the fenestral recess.

The Palate.—That the form of the pterygo-palatine articulation in *Zeledonia* is more primitive than that which obtains in *Sialia* or *Erithacus* for example, there can be little doubt. In support of this view I would cite the conditions which obtain in *Menura.* In this bird the hemipterygoid element does not fuse with the palatine till late in life (Pl. II. fig. 10, *h.pt.*), but when this has taken place the appearance of the palatine is precisely the same as that of *Zeledonia.*

The nature of the palato-pterygoid articulation in *Menura,* and the transformation in the details of this articulation which can be traced in *Zeledonia, Erithacus, Sialia,* and *Turdus* for example, on the one hand, and the peculiar modifications which obtain in forms like *Bucco* and *Megalæma* for example, on the other, seem to shew conclusively that the fusion between the pterygoid and the palatine, which takes place in the latter and in some Passeres, has resulted from fusion between a sometime free pterygoid and palatine, which articulated by a flexible joint formed between the pterygoid shaft and the segmented extremity of that bone and the palatine. This anchylosis took place when the movement between pterygoid and palatine became too restricted to allow of free movement between the two bones. In other words, the unsegmented pterygoid of the forms in question is not a primitive condition, but has been derived from the fusion of a segmented pterygoid such as obtains in the majority of the Neognathæ *.

The style-shaped maxillo-palatines of *Zeledonia* represent an undoubtedly specialized condition. In the typical Turdiform palate—e. g. *Merula, Cossypha*—these structures are larger, spoon-shaped, and inflated at the free end to form a kind of pocket. The spoon-shaped plate underlies the body of the vomer. The linear form seen in *Zeledonia* is obviously a degenerate condition of a maxillo-palatine of the type found in *Erithacus* or *Sialia,* for example. Here these elements are rod-shaped, and much inflated to form delicate shells of bone open along the outer side. *Phylloscopus* and *Anthus* shew the Turdiform type.

V. SUMMARY.

As to the precise position of *Zeledonia* I regret that I can say nothing definite until I have had an opportunity of examining much more material than is procurable at present. Before any sound deduction can be framed on this particular question it will be necessary to obtain examples in immature plumage and a series of birds for dissection. The specimen submitted to me for the purpose of this paper was not well-preserved, and, furthermore, was so much damaged that reliable data on many questions concerning the soft parts were impossible. Quite as necessary are examples of other species allied to *Zeledonia.*

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* Pycraft, "On the Morphology of the Palate in the Neognathæ," Journ. Linn. Soc., Zool. xxviii. p. 333.

Nevertheless, it seems to me that there can be no doubt about the Turdine affinities of *Zeledonia*. Whether further research would justify the formation of a separate subfamily for this bird, as has been proposed, remains to be seen. Its nearest allies seem to be among the Sialiinæ.

That it is an isolated form, primitive in some respects, highly specialized in others, seems beyond dispute. Its powers of flight must be of a very limited description; the small size of the keel of the breast-bone and the peculiar form of the wing bear out this contention. In this matter of the reduction of the wing it is significant to remark that it takes place, not by a decrease in the length of *all* the remiges, but by the shortening of the outer primaries only, leaving the inner primaries and secondaries still unreduced. This is exactly what takes place during the early stages of the degeneration of the wing throughout the class Aves.

To keep this paper within the smallest possible limits I have been obliged to omit the results of comparisons with the more distant allies of the Turdidæ and of those reputed to hold such a position; but I would say here that there seems good ground for believing that further research will demand the formation of one large group of Turdiform birds.

This would include the Timeliidæ of Dr. Sharpe's 'Hand-list' (in part.), the Pycnonotidæ, Mimidæ, Turdidæ, Sylviidæ, Mniotiltidæ, Regulidæ, Cinclidæ, Troglodytidæ, Alaudidæ, and Motacillidæ. The relationship of these groups one to another is a matter upon which I am now engaged, and is one of extreme difficulty.

I am equally unable, at the present juncture, to say anything definite as to the probable nearest allies of this great Turdiform group. Suffice it to say, I do not think that this group stands so low in the scale as some have imagined, if we may give any weight to the form of the maxillo-palatine processes and the relations of the squamosal in the nestling; and to my mind these are characters of some importance. Neither do I believe that they stand so high as others have contended; but, as I have just remarked, this is a matter which I am now trying to sift.

EXPLANATION OF THE PLATES.

Plate I.

Zeledonia coronata, p. 1.

Plate II.

Figs. 1–5 shew the various forms of the tympanic cavity from the right side for comparison with that of *Zeledonia*, seen in the side view of the skull of fig. 9.

Fig. 1. The tympanic cavity of *Merula*. ×2. Here the lateral occipital wing (*l.o.w.*) is much inflated to form a large chamber in front of the tympanic membrane. This wing, it will be noticed, curves upwards and forwards to terminate on the zygomatic process. This is an extremely specialized type.

Fig. 2. The simpler form of the tympanic cavity in *Geocichla*, intermediate in type between that of *Turdus* and *Sialia*. ×2.

Fig. 3. The tympanic cavity of *Sialia*, representing probably the simplest type among the Turdidæ. ×2. Letters as before.

Fig. 4. The tympanic cavity of *Daulias luscinia*. ×2. A specialized type, inasmuch as the lateral occipital wing (*l.o.w.*) is continued upwards to the base of the postorbital process (*p.o.p.*).

Fig. 5. The tympanic cavity of *Menura superba*. Nat. size. The tympanic cavity as seen here is possibly of a more primitive character than in any of the Turdidæ.

Fig. 6. Palate view of the skull of *Geocichla*, shewing vestigial basipterygoid processes (*bp.p.*). ×$\frac{1}{3}$.

Fig. 7. Palate view of skull of *Zeledonia coronata*. ×2.

Fig. 8. Palate view of skull of *Sialia wilsoni*, to compare with that of *Zeledonia*. ×2. Note the larger and inflated maxillo-palatine processes (*mx.p.*).

Fig. 9. Lateral view of skull of *Zeledonia coronata*. ×2. Note the position of the zygomatic process (*z.ps.*).

Fig. 10. Hemipterygoid of *Menura superba*. This does not appear to fuse with the palatine till comparatively late in life. ×2.

Fig. 11. Rhamphotheca of *Zeledonia coronata*, to shew the remarkable operculum (*op.*). ×2.

Fig. 12. Hemipterygoid region of skull of *Turdus*, to compare with that of *Menura* and *Zeledonia*. ×2.

Explanation of the Lettering.

a.p. = antorbital process.
a.tb. = alinasal turbinal.
bp.p. = basipterygoid process.
h.pt. = hemipterygoid.
l.o.w. = lateral occipital wing.
mx.p. = maxillo-palatine process.
op. = operculum.
o.s. = otic articular surface for quadrate.
pa. = palatine.
pt. = pterygoid.
p.o.p. = postorbital process.
q. = quadrate.
vo. = vomer.
z.p.s. = processus zygomaticus squamosi.
z.s. = squamosal articular surface for quadrate.

II.—*Further Notes on the Nesting of Birds in the Province of Fohkien, S.E. China.* By J. D. La Touche, C.M.Z.S., M.B.O.U., and C. B. Rickett, F.Z.S., M.B.O.U.

The following notes deal with the birds nesting on the plains and lower hills of the Province. Those breeding on the mountains have already been dealt with by La Touche (see 'Ibis,' 1899, pp. 169–210, 400–431; 1900, pp. 34–51).

The districts mentioned in this paper under the names of Yuen Fu Valley, Peling District, and the Plains may be taken to include the country from the sea-level up to 1000 feet.

Central Fohkien relates to the country around Ching Feng Ling and Yamakan ('Ibis,' 1897, p. 600; 1900, p. 52), which ranges from 1500 to 2500 feet.

The Yuen Fu River is a feeder of the Min River (on which the city of Foochow stands), and enters it about 35 miles from its mouth.

Corvus torquatus Less.

The Common Crow of Foochow. It is an early breeder. We have had callow young brought to us on February 23rd, and Rickett procured a clutch of eggs almost ready to hatch taken on January 26th.

The nest is nearly always placed high up in a tall pine-tree. It is composed of sticks, some of which are of considerable size, with an inner layer of finer twigs and a lining of dry grass and pine-needles. The eggs are very variable in size, shape, and colouring. The ground-colour is light green or bluish green, more or less blotched, spotted, or speckled with sap-green, and there are generally underlying spots of dull reddish grey or violet-grey.

The most common shape of the eggs is ovate, but pyriform ovate, elongated ovate, and almost oval eggs also occur. Thirty-nine specimens average 1·67 × 1·19 in.: the largest 1·82 × 1·25, the smallest 1·51 × 1·17.

CORVUS MACRORHYNCHUS Wagler.

Less common than *C. torquatus* and a much later breeder. It commences building about the end of March or the beginning of April. We have only one egg of this species, taken on April 25th from a nest in a tall pine. It is ovate with a very pointed apex. In colour it is light bluish green, blotched and longitudinally streaked with sap-green. There are a few underlying markings of grey.

It measures 1·71 × 1·17 in.

PICA CAUDATA Linn.

The Magpie is also an early breeder, and may be seen carrying sticks at the end of December. We have, however, eggs dated as late as April 2nd. Some taken in May were probably of a second laying.

The nest needs no description. As the natives consider the bird lucky they do not molest it, in consequence of which it builds in most exposed and often easily accessible sites.

Forty-six eggs average 1·37 × ·98 in. : the largest 1·49 × 1·02, the smallest 1·2 × ·96.

UROCISSA SINENSIS (Linn.) : Ibis, 1900, p. 40.

This species breeds in the plains. The eggs have already been described by La Touche.

The nest is composed of twigs and tough tendrils, lined with roots and dead leaves or a little dry grass.

Rickett once watched a bird "shewing off" to its mate as they sat in a tall tree. It puffed out the feathers of the head and neck, raised its tail which was spread like a fan, and turned its body slowly from side to side.

DENDROCITTA SINENSIS (Lath.).

Although a common resident on the wooded hills, we have never obtained its eggs.

La Touche does not mention it in his paper on "The Birds of North-west Fohkien" ('Ibis,' 1899–1900).

GARRULUS SINENSIS Gould : Ibis, 1899, p. 39.

Common on the lower wooded hills of the Province.

We have nothing to add to what La Touche has already written as to its eggs and nests taken at Kuatun.

PARUS ATRICEPS Horsf.

This Tit occurs near Foochow, but is not nearly so common as *P. minor*.

A nest with six eggs was taken from a hole in a bank. It was a fairly neat cup, composed externally of a thin layer of moss, and lined with hair, buffalo-wool, and a few feathers felted together. The eggs averaged ·65 × ·48 in.; they were white, spotted with light red. The female was caught on the nest.

PARUS MINOR T. & S.: Ibis, 1899, p. 401.

This very common resident nests in all parts of the Province from the plains up to 3000 or 4000 feet on the mountains of the North-West.

The nest is placed in a hole in a tree, wall, or bank. One was built in a Chinese grave, the birds entering through a small aperture like a mouse-hole on a level with the ground. The materials used are moss, wool, hair, pigs' bristles, feathers, fine dry grass, roots, and fibres; these are sometimes carelessly arranged in a loose shallow cup or mere hollowed pad; at other times they are worked up into a firm compact felt. One nest taken near Foochow resembled in shape the toe portion of a bath-slipper.

On the plains nesting begins about the end of March and two broods are reared in a season. Eggs average ·65 × ·50 in.; they are white, spotted and speckled with pale red.

ACREDULA CONCINNA (Gould).

Acredula concinna Styan, Ibis, 1891, p. 342; La Touche, Ibis, 1899, p. 403.

We have not obtained the eggs of this common Tit near Foochow.

Rickett found a nest in a young pine-tree when Pheasant-shooting up the Yuen Fu River in November, which was similar to the specimen obtained by La Touche at Kuatun.

Young broods are to be seen early in May.

MELANOCHLORA SULTANEA (Hodgson).

The natives at Yamakan, Central Fohkien, say that this species breeds there in holes in trees and lays spotted eggs. Our collectors, however, did not obtain any specimens of them.

PARADOXORNIS GUTTATICOLLIS David.

No doubt breeds in Central Fohkien, but we have no specimen of its egg.

GARRULAX PICTICOLLIS Swinhoe.

This species no doubt nests in Central Fohkien, where it is common in winter.

We have, however, no specimen of its egg.

DRYONASTES PERSPICILLATUS (Gm.): Ibis, 1887, p. 218.

We have taken but four nests of this common resident. There are two, or perhaps three, broods in the season, as we have taken eggs as late as July 11th.

A nest found on May 9th was placed in a large thorny bush eight or ten feet from the ground. It was composed of hard wiry tendrils, within which was a layer of dead leaves, and then a layer of straw, that shewed conspicuously all round the edge, giving the nest the curious appearance of having a straw binding. The lining was of pine-needles. Another nest, built in a small tree, was composed of coarse grass, roots, and a few small twigs, lined with fine dry grass.

The nests are 6 or 7 inches in external diameter, 4 inches in internal diameter. In depth they are 4 inches externally and 2 to 3 inches internally.

Eight eggs average 1·10 × ·85 in.: they are delicate greenish white in colour and, as a rule, very glossy, but the texture is uneven; in shape they are more or less oval. There are three or four eggs in a clutch.

DRYONASTES SANNIO (Swinhoe).

We have never obtained the eggs of this common resident species. Two young birds just able to fly were shot in the Yuen Fu Valley on May 18th. They resembled the adults, but were much duller in colour.

TROCHALOPTERON CANORUM (Linn.): Ibis, 1899, p. 180.

Breeds commonly about Foochow. La Touche procured a nest with eggs at Peling as already recorded; but that is the only one obtained by us near Foochow.

Ianthocincla cinereiceps (Styan): Ibis, 1899, p. 181.

This bird also breeds in the Ching Fung Ling district, where our collectors found nests with young.

Pomatorhinus stridulus Swinhoe: Ibis, 1887, p. 218; 1899, p. 183.

We have young birds shot in the Yuen Fu Valley in May.

A nest obtained in Central Fohkien was composed of bamboo-leaves and fern-fronds, lined with fine dry grass. It was probably damaged in the taking, as it was a flimsy cup without the usual dome. The native who took it said that it was just as he found it, and Hume gives instances of birds of this genus sometimes building open nests ('Nests and Eggs,' vol. i. pp. 81, 83, & 88). It contained two eggs, measuring ·92 × ·67 and ·89 × ·69 in.: they were ovate in shape, somewhat blunt at the smaller end; pure white, smooth, and slightly glossy in texture, with very thin shells.

Alcippe hueti David: Ibis, 1899, p. 185.

Breeds on the hills and mountains of the Province.

A nest taken by Rickett's collectors in Central Fohkien contained four very abnormally-coloured eggs. The skin of the old bird, shot from the nest, places their identity beyond doubt. These four eggs (taken on April 29th) are pink, somewhat thickly marked with specks and short streaks of darker pink. Two of them have a well-marked ring round the larger end, in another the ring is still more strongly marked, while the fourth has no trace of a ring; they measure ·76 × ·56 in. Two other clutches obtained at the same time are normally coloured and average ·75 × ·58 in. The nests are much the same as those already described by La Touche.

Two broods are apparently reared in a season.

Schœniparus brunneus (Gould).

A common resident species in suitable localities.

We have, however, only once obtained its nest and eggs.

On April 24th our collectors took a nest in Central Fohkien. It was a domed or semi-domed structure, very loosely put together and composed of dead leaves, lined at the bottom with dry grass. It measured in diameter externally 4 inches, internally 2 inches; it was 5½ inches in external depth and 3 inches in depth of egg-cavity.

The eggs, four in number, measure ·79 × ·62, ·81 × ·62, ·81 × ·62, and ·84 × ·62 in. The ground-colour is greenish white, clouded and blotched with pale brown, over which are dark specks and short lines of deep vandyke-brown, almost black. The underlying markings (which in one egg form a small cap on the larger end) are blue-grey. In shape the eggs are ovate, with a rather broad apex. In style of markings they call to mind those of *Alcippe hueti* ('Ibis,' 1899, p. 185).

STACHYRIDOPSIS RUFICEPS (Blyth): Ibis, 1899, p. 186.

A common resident on the wooded hills and mountains of the Province. Two nests taken in Central Fohkien on April 26th and 30th, and containing two and four eggs respectively, do not differ in any respect from those already described.

In 'The Ibis' for 1899, p. 186, La Touche drew attention to the difference between the Formosan and Fohkien birds. He noticed also a marked difference between these two races and the Indian bird, but as the Paris Museum at that time possessed only one Indian skin, he took no note of what those points of difference were.

Since then, Ogilvie-Grant (P. Z. S. 1900, p. 476) has recorded his observations on the subject, but apparently does not think the races worthy of separation.

MYIOPHONEUS CÆRULEUS (Scop.): Ibis, 1899, p. 178.

Four nests from Central Fohkien, taken early in May, were composed of twigs, moss, roots, and dead leaves, lined with roots and dead leaves. These birds probably breed twice in the season, as a nearly finished nest was found on June 27th. The eggs have already been described. Thirteen average 1·34 × ·97 in.

This species is a common resident in the Province wherever there are streams flowing among rocks and boulders.

Zosterops simplex Swinhoe: Ibis, 1898, p. 367; 1899, p. 431.

Common and resident on the low grounds, but apparently rare on the higher levels.

The nests vary a good deal in the amount of materials employed in the construction, some being little more than a frail network of fine dry grass bound together and secured to the supporting twig by cobwebs, while others are quite substantial little cups of moss, fine dry grass, roots, and fibres. They are either slung like a hammock in the fork of a twig or attached to the side of one. They measure about 2 inches in diameter.

The eggs are pale greenish blue, and average ·60 × ·47 in. There are three or four in a clutch.

Some caged birds of this species kept by La Touche became grey above in the place of green; the reddish flanks turned deeper in shade, while the yellow throat faded almost to white.

Chloropsis lazulina (Swinhoe).
Hypsipetes leucocephalus (Gm.).
Hemixus canipennis Seebohm.
Spizixus semitorques Swinhoe.
Iole holti (Swinhoe).

The five above-mentioned species are all more or less common in Central Fohkien in winter, and some of them, if not all, most probably nest in that district.

Pycnonotus sinensis (Gm.): Ibis, 1898, p. 366.

This common resident appears to be mostly confined to the low levels. It builds in bushes, low trees, hedges, low bamboos, and creepers on walls. The nest is never far from the ground, and is composed of a variety of materials, viz., fine twigs, dry grass, dead and skeleton leaves, roots, moss, feathers, paper, &c., lined with fine dry grass, roots, hair, pine-needles, and often the seeding tops of "sword-grass." Some nests are composed entirely of the latter, and are then very firm and compact. When composed of other materials, they are often loose untidy structures. This species frequently builds in gardens close to the houses. Rickett notes that the female seems to do all the work of building, the male singing near her and driving away any bird that approaches the site. The nest is cup-shaped and measures externally 4 or 5 inches in diameter, and from 2½ to 4 inches in depth. The internal diameter is about 3 inches and the depth 2 inches.

There are two or three broods in a season. The eggs, usually three or four in number, vary a good deal in appearance. They are pale mauve or mauve-white, spotted or blotched with lavender-grey and claret-colour or crimson-lake over paler red. Some eggs are more lightly marked with speckles. The markings are usually denser at the larger end. The most usual shape is ovate.

Thirty-one eggs averaged ·88 × ·64 in.: the largest of these was ·90 × ·70, the smallest ·84 × ·60.

It is not at all unusual to find a piece of a snake's slough worked into a nest, and some are rendered very conspicuous by the bits of white paper used in their construction.

Young birds assume the adult plumage at the first autumn moult, previous to which the head is ashy, paler on the ear-coverts and hind-neck; the back and wing-coverts are ashy-brown; the quills and tail-feathers are edged with olive-yellow on the outer webs; the throat is white, as are the under parts, which are tinged with yellow, while a pale ashy band crosses the chest.

PYCNONOTUS ATRICAPILLUS (Vieill.).

A common resident about Amoy, but a rare straggler in winter as far north as Foochow.

La Touche does not appear to have taken its eggs when at Amoy.

BUCHANGA LEUCOGENYS Walden.

A common summer-visitor to the plains, arriving in April and leaving in September or October.

Nesting commences early in May. Possibly two broods are reared in a season, as we obtained a clutch of eggs, nearly ready to be hatched, in July. The nest is placed in a fork near the end of a horizontal branch of some tall pine or other tree, usually at a good height from the ground. It is a shallow cup, very well finished with thick substantial sides, but very thin at the bottom, so much so that as a rule the eggs practically rest on the branch. The materials used are fine twigs, pine-needles, fine dry grass, roots, and tendrils. These are strongly bound together with cobwebs, to which the bird attaches lichens and moss. The lining is generally of pine-needles, but at times fine dry grass, roots, fibres, and hair are used.

The average measurements of twenty-one nests are as follows:—Outer diameter 5 inches, inner about 3; outer depth about 2, inner 1¼.

The eggs vary a good deal, but are generally referable to one of the four following types:—

(*a*) Pinkish white, with rather large spots or blotches of crimson over underlying spots of lavender-grey.

(*b*) Delicate creamy pink, with small, roundish, dark crimson and underlying lavender-grey spots.

(*c*) More or less pale yellowish pink, with large and irregular or small round spots of pale crimson, or pale pinkish red. The underlying markings are as in (*a*) and (*b*).

(*d*) Pale orange, with a few very pale red blotches and underlying blotches of lilac-grey.

In La Touche's collection are three or four clutches which differ somewhat from those described, the most abnormal being one of a greenish-white ground-colour, with a few spots and specks of washed-out reddish brown over dull greyish-pink specks.

The markings are generally closer at the larger end, and are seldom, if ever, numerous. The shell is smooth and without gloss, except in much incubated specimens. In shape the eggs are variable, but are most commonly ovate.

The clutch usually consists of four; only once have we met with five eggs in a nest.

Eighty-two eggs average ·96 × ·74 in.: the largest 1·04 × ·76, the smallest ·86 × ·68.

The parents attack and drive away with great fury any Kite, Crow, or Magpie that passes near the nest-tree, displaying at such times great power and command of wing. It was when our men were taking the eggs that we saw these powers to perfection, as the birds swept swiftly but silently to and fro among the branches, now and again darting towards the nest as if to defend it.

CHIBIA HOTTENTOTA (Linn.).

A summer visitor, breeding on the plains and in Central Fohkien. The nests are, so far as our experience goes, always placed in bamboos at a height of from fifteen to twenty feet from the ground. They are slung to two or three sprays near the top, and can only be obtained by carefully cutting down the canes.

The nests, though flimsy in appearance, are strongly built of fine twigs, tough roots, and tendrils, with occasionally some dry grass, moss, or dead leaves, those from Central Fohkien being more substantial than others taken in the Yuen Fu Valley.

The eggs are laid in May or early in June. They are four or five in number, and vary but little in shape, being usually ovate. The ground-colour is more or less deep pinkish creamy. The markings are, as a rule, as follows:—

(*a*) Blotches or speckles of pale red over underlying spots and blotches of reddish lilac.

(*b*) Speckles of pale red over lavender-grey specks.

(*c*) Same as the last, but the marks are short streaks and V-shaped spots.

(*d*) Sparsely speckled with very dark crimson or madder-brown over spots of violet-grey.

Forty-four eggs average 1·14 × ·82 in.: the largest 1·26 × ·84, the smallest 1·02 × ·80.

ORTHOTOMUS SUTORIUS (Forst.).

This very common resident species appears to confine itself to the plains. It nests in the groves of fruit-trees in the valleys, and in gardens, building as a rule low down in some bush or small tree; but creepers on walls, crotons growing in pots, and the leaves of arum lilies are also resorted to. In the latter case the edges of a leaf are sewn together, and in the cone thus formed the nest is placed. As a rule, two leaves are used, but Rickett once found a nest in a small-leaved creeper on a wall, where five or six leaves had been drawn together. The materials used are wool, cotton, moss, hair, fine roots, and vegetable fibres.

One morning a Tailor-bird entered Rickett's room, and picking up a piece of cotton-wool that was lying on the floor carried it to the verandah-rail. Holding the cotton under its feet, it proceeded, by means of its bill, to spin it into a piece of thread, with which it flew off.

Three eggs are usually laid, but four and five may be found. They are of two types of colouring:—

(*a*) Pale green, with large blotches of two shades of pale brick-red over underlying spots of a somewhat violet-red.

(*b*) Pale bluish green, with small spots of madder-brown, almost wholly confined to the larger end.

Twenty-two eggs average ·63 × ·46 in.: the largest ·67 × ·47, the smallest ·59 × ·45.

The old birds exhibit great anxiety when the nest is approached, and flit about restlessly, uttering an incessant nervous "*twit, twit, twit.*"

SUYA CRINIGERA Hodgson: Ibis, 1899, p. 187.

La Touche has already described nests of this bird taken by him at Peling. It no doubt breeds also in Central Fohkien.

SUYA SUPERCILIARIS Anderson.

This species was first recorded as Chinese by Rickett in 'The Ibis' for 1894, p. 218.

A nest sent to him in May by Dr. Stenhouse, R.N., may pretty safely be assigned to it. The parent bird was shot, but, being a good deal damaged, Dr. Stenhouse unfortunately threw it away. He said that it had a conspicuous white stripe over the eye, and on being shown the plate in Anderson's 'Yunnan Expedition,' stated that he was sure that it was the same bird. The nest was placed low down in a young pine, and was partly concealed by the rank grass growing round it. In shape it was a long blunt oval, with a large opening near the top, and was of flimsy construction. Its measurements were as follows:—Height at back 8 inches, external diameter $3\frac{1}{2}$, depth of egg-cavity $2\frac{3}{4}$.

The materials used were moss and the seeding tops of grasses, with a few dead leaves and some cocoon-silk.

The eggs (which were very heavily incubated) were pale green marked with tiny red specks, most numerous at the larger end, where they formed a small zone.

Prinia inornata Sykes: Ibis, 1898, p. 360.

This common resident breeds on the plains and low hills of the Province. The well-known nests are built in clumps of coarse grass, bamboos, and wheat-fields.

There are two types of eggs:—

(*a*) With the usual light greenish-blue ground-colour.

(*b*) With a green ground-colour.

The markings do not vary much.

Thirty eggs average ·59 × ·44 in.: the largest ·63 × ·45, the smallest ·56 × ·40.

Prinia sonitans Swinhoe: Ibis, 1898, p. 359.

Common on the low hills.

The nest is, as a rule, a little less flimsy-looking than that of *P. inornata*. It is composed of the seed-spikes and down of grasses or of fine dry grass, with occasionally some cobwebs, cocoon-silk, or a few leaves intermixed, and is always slightly lined at the bottom of the egg-cavity with very fine dry grass, roots, or hair. The shape varies somewhat—one nest was a perfect oval with what might be described as a piece diagonally sliced off at one end; another had two openings opposite to each other, and resembled a small deep basket with a handle. The structure is usually placed in bamboos or among coarse grass, and is 5 or 6 inches in height, 3 or 4 inches broad, and from 2 to 3 inches deep.

Sixteen eggs average ·60 × ·45 in.; they are pale red, heavily suffused with a darker shade.

LANIUS SCHACH Linn.: Ibis, 1894, p. 217.

This handsome resident species retires to the low brushwood-covered hills in April for nesting-purposes. It builds in some thick bush, or clump of "sword-grass," a large, deep, and substantial cup-shaped nest of twigs, coarse roots, tendrils, bamboo-leaves, and dry grass, lined with fine dry grass and seeding grass-spikes.

The eggs are from four to six in number and ovate in shape.

A clutch taken by La Touche at Amoy were pale yellowish green, with irregular spots of pale brownish red of two or three shades over spots of two shades of reddish grey and lavender-grey. They had a cap of red surface-spots over confluent underlying blotches.

The markings in all the eggs which we obtained are most numerous at the larger end, where they tend to form a cap or ring.

Sixteen eggs average 1·03 × ·78 in.

LANIUS FUSCATUS Less.: Ibis, 1894, p. 219.

The young birds described by the Rev. H. H. Slater were no doubt, as he wrote in the footnote to Rickett's article under this heading, "young *L. fuscatus* of pure blood."

We have never obtained the eggs of this species.

PERICROCOTUS CANTONENSIS Swinhoe.

A common summer-visitor to the plains, arriving early in April and leaving in October.

It commences building at the end of April or early in May. The nest is placed on the branch of a pine or some other tree, near to but not *in* a fork. It is a beautifully neat little cup, generally with perpendicular walls. The sides are thin, and there is often no real bottom, the eggs having only the thin lining materials between them and the branch. If taken in wet weather, or allowed to get damp, the nest becomes quite soft and gummy, regaining its firmness when dry. The materials used are fine grass, moss, fibres, roots, and pine-needles, plastered over on the outside with cobwebs, to which are stuck lichens and a little moss. The lining is of fine fibres or roots.

The nests measure about $2\frac{3}{4}$ inches in external diameter, $2\frac{1}{4}$ inches internal diameter, and $2\frac{1}{4}$ inches in depth. Owing to their small size and to the covering of lichen they are not easy to find, especially when placed, as they usually are, high up in a tall tree.

The eggs are usually four in number and more or less ovate in shape. The ground-colour is bluish grey or pale greenish stone-colour, more or less spotted, speckled, or streaked with shades of brown, brownish red, pale earthy yellow, and purple, over underlying markings of lavender-grey. The markings are, as a rule, thicker at the larger end, where they form an ill-defined cap or ring.

Twenty-six eggs average ·78 × ·60 in.

Campophaga melanoptera (Rüpp.).

Three eggs, taken on June 11th, measured ·90 × ·70 in.

Our collectors took a nest (also in June) which contained a newly-hatched bird and an egg on the point of being hatched. The latter measured ·95 × ·69 in. The nest was placed on a fork at the end of a branch. It was a mere pad, composed of pine-needles, fine leaf-stalks, and pale silvery-grey lichens, bound together with cobwebs. In shape it was an irregular oval, with a slight depression, less than half an inch in depth, for the eggs. It was $3\frac{1}{2} \times 4\frac{1}{2}$ inches in dimensions, with a maximum thickness of $1\frac{1}{2}$ inches.

The eggs are ovate in shape, with a bluish-white ground, thickly streaked and spotted longitudinally with brown and grey.

This species is a common summer-visitor to the plains and low hills, but being shy and silent attracts little notice.

Oriolus diffusus Sharpe.

Like the last species, this is a common summer-visitor to the plains.

The nest is placed in tall bamboos, large pines, or other trees, always at a considerable height from the ground. It is a deep cup slung in the fork of a branch, and varies in shape and construction. In some cases the walls are very thick and the bottom thin, in others the reverse obtains; some specimens, again, are very substantial throughout. The materials used are bamboo-leaves, coarse and fine dry grass, straw, and seeding grass-spikes, bound together by roots, tendrils, and cobwebs. The latter and cocoon-silk are used to bind the nest to its supports. The lining consists of fine dry grass, pine-needles, roots, and seeding grass-spikes. Native paper forms a favourite finish to the nests: some are thickly coated with it, and one in Rickett's garden was not only covered with it, but had a strip over a foot long hanging from the bottom of the fabric, which was thereby rendered very conspicuous. The eggs are laid in May. In colour they are a beautiful blush-pink, spotted with very dark crimson over lavender-grey underlying spots. The surface-spots are often somewhat blurred in outline, as if the colour had "run."

The eggs of the Indian bird, as described by Stuart Baker ('Ibis,' 1896, p. 332), seem to differ from those of the Chinese bird. In the latter the full clutch consists of four eggs, which are ovate, with a tendency to become oval.

Twelve specimens average 1·12 × ·82 in.

Although a shy bird, this Oriole frequents gardens and often builds close to houses, its clear loud notes and bright plumage readily attracting attention.

STURNIA SINENSIS (Gm.).

Also a summer-visitor, and breeding in the native city. We have never, however, obtained its eggs. Some collected by La Touche at Swatow (where, as well as in Hongkong, it nests in foreign-built houses) were very pale blue in colour.

GRACULIPICA NIGRICOLLIS (Payk.).

An extremely common resident on the plains.

The nest is a large domed structure of irregular shape, composed of dry grass, straw, leaves, twigs, and in fact any materials that come handy, even such as string, paper, hair, and rags. It is very conspicuously placed in some pine or tall tree at a good height from the ground.

The eggs are laid in April, and number from four to six in a clutch. They are greenish blue, with a considerable amount of gloss. In shape they vary from narrowly ovate to oval. Thirty-nine specimens average 1·25 × ·91 in. There are two, or perhaps three, broods in a season.

These birds' antics at pairing-time are most absurd to watch. One sidles up to its mate uttering its everlasting "*tee-a-chee*" with widely open bill, the other sits with puffed-out plumage, its bill buried in the breast-feathers; then follows a sham squabble, consisting of much snapping of beaks and playful peckings, after which they fly off to another tree and repeat the performance. Young birds when following their parents constantly utter a harsh "*tcherk*."

ACRIDOTHERES CRISTATELLUS (Linn.): Ibis, 1898, p. 369.

This common resident breeds in holes in trees and walls, as well as under the eaves of houses. The nest is a regular rubbish-heap of dry grass, straw, leaves, feathers, &c. The wing- and tail-feathers of Pigeons, Kites, Crows, and Magpies are largely used. In every nest examined by Rickett there was a snake's slough or part of one, and our men were once told by a native that *every* Mynah's nest was thus provided.

The eggs are pale greenish blue. These birds are very noisy and pugnacious in spring.

TERPSIPHONE INCII (Gould).

A summer-visitor to the plains and low hills about Foochow. It breeds in May, placing its nest on a horizontal branch or in the fork of an upright from six to about fifteen feet from the ground.

The structure is a beautifully firm and compact little cup, from 3 to 4 inches in external diameter, 2 to 2½ inches in internal diameter; the outer depth is from 2½ to 3½ inches, the depth of cup from 1¼ to 1¾ inches. The materials used are fine dry grass, dead leaves, roots, and moss bound together with cobwebs, and plentifully spangled on the outside with spiders' egg-cases, lichens, cocoon-silk, bright-coloured moss, and sometimes small scraps of white paper. The lining materials are pine-needles, fine grass, roots, human hair, coir, and seeding grass-spikes.

The eggs are three or four in a clutch. They are more or less broadly ovate in shape, and average (eleven specimens) ·77 × ·59 in. The ground-colour is light orange, speckled with burnt-sienna, over underlying lilac-grey specks. The markings are thickest at the larger end, where they form a cap or broad zone, the rest of the shell being very lightly marked, often with only a few scattered specks.

In one instance La Touche found a male (in red plumage) sitting on three eggs, his long tail-feathers floating in the breeze!

MICROCICHLA SCOULERI (Vigors): Ibis, 1899, p. 195.

A resident species in all suitable localities, but it does not appear to be common. We have not taken the eggs near Foochow, and so have nothing to add to what La Touche has already said on the subject.

HENICURUS SINENSIS Gould: Ibis, 1899, p. 193.

A very common resident in all suitable localities.

A nest taken by our collectors in Central Fohkien on May 10th was a mere hollowed pad of dead and skeleton leaves, dry grass, and roots, with a few bamboo-leaves.

HENICURUS SCHISTACEUS Hodgson: Ibis, 1899, p. 194.

This species is far less common than the last.

A nest with two eggs taken in Central Fohkien on May 6th was composed of moss and roots, lined with fine dry grass, roots, skeleton leaves, and one feather. It was a neat firm cup.

RHYACORNIS FULIGINOSA (Vigors): Ibis, 1899, p. 202.

A common resident on the plains as well as on the mountains of the Province wherever there are suitable streams.

We have nothing to add to what La Touche has already written on the breeding of this species in the mountains, except to note that the nests vary a good deal in construction. Some are neat firm cups, others loosely and untidily built; some, again, are mere pads, whilst others are a massive collection of materials with only a slight hollow for the eggs.

COPSYCHUS SAULARIS (Linn.).

A very common resident on the plains. It seems to prefer the neighbourhood of human habitations. About Ching Fung Ling we rarely met with it, but when we did, we invariably found some dwelling near at hand, though sometimes merely a lonely farmhouse hidden among the scrub on a hill-side.

Breeding commences in April, and two, or perhaps three, broods are reared in the season. The nest is placed in a hole in a tree or wall or on the ground under a stone or stump. Rickett took one that had been built in a rolled-up sun-blind in a verandah. The materials used are fine twigs, dry grass, moss, roots, hair, pine-needles, and occasionally a feather or two. These are put together in a loose untidy manner, and often form a mere pad.

The eggs are pale blue, thickly speckled, spotted, and blotched with reddish brown and violet, the latter forming sometimes surface, as well as underlying, markings.

Twenty-eight eggs average ·87 × ·68 in. There are five in a full clutch.

MERULA MANDARINA (Bp.).

A very common resident on the plains, frequenting gardens and copses, and, like the Magpie-Robin (*Copsychus saularis*), always to be found in the vicinity of human dwellings.

The nest is placed high up in some tall pine or other big tree. It is built on one of the large boughs in a fork near the extremity of a branch, or in the angle formed by one branch with another or with the trunk.

The materials used are fine twigs, straw, dry grass, moss, roots, dead leaves, and a variety of odds and ends, such as human hair, paper, &c. These are all plastered together with mud in varying quantities, and lined with fine dry grass, roots, and sometimes pine-needles. The amount of mud used is often very considerable.

According to Rickett's observations, the female is the sole architect, the male sitting on a branch near the nest singing, and attacking any birds that approach, especially Crows and Magpies, while he does not hesitate to swoop down at a prowling cat. The young in the nest appear to be fed chiefly by the female, but as soon as they leave the nursery the male takes his share in caring for them. Nesting begins in April, and two broods are reared.

The eggs are four or five in number, and, as a rule, ovate, but vary a good deal in shape as well as in colour. Forty-one eggs average 1·18 × ·87 in. They are blotched, spotted, or speckled with various shades of red over underlying violet spots. The markings often form a cap, usually at the larger end, but sometimes at the apex.

The ground-colour varies from pale greenish to bluish green, while occasionally it is of a reddish tint.

UROLONCHA ACUTICAUDA (Hodgs.).

A very common resident, apparently confined to the plains and low hills. It appears to breed during most months of the year, as Rickett has notes of eggs and young, or of old birds carrying nest-materials, in nearly all the months between February and November inclusive.

The large globular nest of dry grass and bamboo-leaves is placed in a bush or small tree. The grass-stems project round the entrance and form at times a short neck.

Six eggs of a clutch taken on October 27th average ·60 × ·45 in.

MUNIA TOPELA (Swinhoe).

Also a common resident on the plains. We have, however, no authentic eggs.

Rickett's coolie once found a nest which with mistaken zeal he took, instead of calling his master's attention to it, as he had instructions to do. He was told to return it to the place where he found it, which was a low thick bush in which Rickett saw one of these birds hopping restlessly about. The nest was replaced, but when visited a few days later was found to have been deserted. It was a deep open cup, composed of seeding spikes of "sword-grass," and contained one Munia-like egg. La Touche when at Tamsui had similar nests brought to him, but was unable to identify them with certainty.

CHLORIS SINICA (Linn.).

A common resident in the plains. Breeding begins in April, when several nests are often to be found in the same grove. They are usually placed in a pine-tree near the extremity of a branch; we, however, obtained one in a fruit-tree, built in the angle formed by a branch with the trunk, and another in Rickett's garden was placed in a similar position in a Grevillia (*Grevillia robusta*).

The nest is always well concealed and is a beautiful compact little cup with very thick sides. It is composed of fine twigs, moss, dry grass, pine-needles, roots, fibres, vegetable down, and feathers, lined with very fine dry grass, roots, hair, or feathers. One brought to Rickett was lined with the short curly chestnut and black tail-feathers of a domestic cock. These curved over the egg-cavity, and at first glance gave the nest the appearance of a domed structure. The measurements are:—external diameter about 4 inches, internal diameter $2\frac{1}{4}$, outer depth $2\frac{1}{2}$, depth of cup $1\frac{1}{2}$.

The eggs are from two to four in a clutch. In shape they are more or less ovate. The ground-colour when fresh is a light opalescent green, with a few specks or comma-like markings of black and red of various shades. There are occasionally some pale reddish grey underlying marks.

Seven eggs in Rickett's collection average ·73 × ·54 in. Two in La Touche's are much larger, viz. ·77 × ·56 and ·82 × ·52.

PASSER MONTANUS (Linn.).

This is our common "House-Sparrow." It builds in any situation to which it can convey unlimited quantities of straw, grass, feathers, and rubbish of all sorts.

We once found two Sparrows' nests built into the base of that of a Kite (*Milvus melanotis*). One contained three young and the other five eggs. There was a young Kite in the nest above. The eggs need no description and are, as is usually the case, very variable in colour. Two extremely abnormal specimens in La Touche's collection are rough rhomboids in shape! They are white, one having some indistinct pale marks at the end.

PASSER RUTILANS Temm.: Ibis, 1900, p. 35.

This species breeds about Foochow. It nests in holes in trees away from human dwellings, and is shy and wary.

An egg in Rickett's collection taken near Foochow measured ·74 × ·52 in.

EMBERIZA CIOIDES Brandt: Ibis, 1900, p. 35.

This common resident breeds on the low hills about Foochow.

The nest, composed of fine twigs, dead leaves, dry grass, and fern-fronds, lined with fine dry grass, roots, fibres, and hair, is usually placed in a small pine-tree, not far from the ground. Rickett saw a pair carrying materials on June 15th, and shot a young bird able to fly well on May 24th, so no doubt there are two broods in a season.

Some nests are firm compact cups, others very loosely and untidily constructed. La Touche has already described the eggs.

Rickett notes that the song resembles that of the Yellow-Hammer without the long final note.

MELOPHUS MELANICTERUS (Gm.): Ibis, 1900, p. 38.

This bird also builds on the low hills about Foochow, but we have no eggs from the district.

A male was seen carrying nest-materials on May 16th.

COTILE RIPARIA (Linn.).

A winter visitor, appearing about October or November and leaving in April or early in May.

Our collectors found a colony breeding in a sand-bank up the Yuen Fu River in February. The five or six nests which were dug out were loose shallow saucers of dry grass, bamboo-leaves, and feathers. They were about 5 inches in diameter and an inch in depth.

The thirteen eggs averaged ·70 × ·50 in.

HIRUNDO GUTTURALIS Scop.

Arrives about March and leaves again about the end of August; but single birds, small parties, and even considerable flocks may be seen passing over during any month in the winter.

This species breeds on the plains, but invariably selects native houses and temples to nest in, and as the natives consider that the birds' presence brings luck, and will on no account suffer them to be interfered with, we have never been able to obtain the eggs.

Young birds are to be seen in the second or third week of May.

MOTACILLA LEUCOPSIS Gould: Ibis, 1899, p. 412.

A common resident, breeding on the hills and mountains and frequenting the plains in winter. We have nothing to add to what La Touche has already written about it.

Eighteen eggs average ·76 × ·59 in.: the largest ·84 × ·61, the smallest ·74 × ·59.

ANTHUS RICHARDI Vieill.

The small race (*A. infuscatus* Blyth, *cf.* Cat. B. Brit. Mus. vol. x. p. 567; Ibis, 1896, p. 494) arrives in April and leaves in October, and breeds on the low hills round Foochow. The larger race arrives in October and leaves in April, so that individuals of the two races may be seen together.

On October 8th Rickett obtained two of each race, which measured in the flesh as follows:—

♀. Length 6·80; wing 3·40; tarsus 1·20 inches.
♂. „ 6·90; „ 3·50; „ 1·20 „
♂. „ 7·60; „ 3·70; „ 1·20 „
♂. „ 7·55; „ 3·70; „ 1·20 „

His series of some seventy or eighty skins (which are now in the British Museum), shot in all months of the year, shew a regular gradation from the largest to the smallest. The average measurements of these is as follows:—Wing 3·54 in., tarsus 1·18, bill from gape ·80, hind claw ·56. Thirty-six specimens average in length 6·92 inches.

The call-note of the two races is identical and very different from that of any other Pipit that visits Foochow. The song (if it can be called so), as noted by Rickett, is merely a repetition of notes sounding like "*chi, chi, chee, chee, chee,*" the last three in a rapidly descending scale. It is uttered on the ground, from the top of a bush or small tree, or when the bird is soaring in the air somewhat after the manner of a Skylark.

We have taken very few nests of this bird, common as it is. This is due to the cunningness with which they are concealed and to the wariness of the old birds. One of the pair (? ♂) is always on the watch, and on the approach of an intruder takes wing, uttering its loud clear double call-note; the sitting bird (which has run some way through the grass) shortly afterwards joins its mate, and the two fly round in the air or settle on some bush or Chinese grave till the danger is past.

The first nest was found by accident. A momentary glimpse of a bird with food in its mouth, dropping behind a ridge, led to the discovery of a nest with four hard-set eggs. The sitting bird fluttered along the ground, feigning a broken wing.

The nest, which is a loose cup of dry grass with sometimes a few fine twigs or a little moss, and lined with fine dry grass, roots, and hair, is placed in a hollow under a thick tuft of grass or herbage.

The eggs, four or five in number, are laid in April and May. They are ovate in shape and average ·80 × ·61 in.

The ground-colour is dull light greenish white, spotted, speckled, and streaked longitudinally with sepia-brown and dark and light purple, over underlying violet-grey blotches, spots, and streaks.

Alauda cœlivox Swinhoe : Ibis, 1892, p. 428.

La Touche notes that this bird "breeds on grassy hills near Foochow and at the mouth of the Min River. Full-fledged young are to be seen in May." We have never obtained the eggs.

Æthopyga latouchii Slater : Ibis, 1891, p. 43, pl. i.

This Sun-bird is common in winter in Central Fokhien, and has been shot about fifty miles from Foochow. It no doubt breeds in the Province, but we have no examples of its eggs.

Gecinus guerini (Malh.) : Ibis, 1900, p. 42.

A common resident in wooded districts.

Two eggs taken in Central Fohkien on May 16th measure 1·14 × ·85 in., 1·21 × ·86.

Picumnus chinensis (Hargitt).
Gecinus citrino-cristatus Rickett.
Chrysophlegma ricketti Styan.
Gecinulus viridanus Slater.
Dendrocopus cabanisi (Malh.).
Iyngipicus scintilliceps Swinhoe.
Micropternus fokiensis Swinhoe.
Lepocestes sinensis Rickett.

We have not obtained eggs of any of these eight species. Of *Lepocestes sinensis* we have skins of young birds.

Megalæma virens Bodd. : Ibis, 1900, p. 46.

A common resident on the hills and mountains of the Province, where it breeds.

Natives all agree in saying that it nests late in the season. Our collectors state that the birds had not commenced breeding in Central Fohkien when they left in the middle of May.

Eurystomus calonyx Sharpe : Ibis, 1887, p. 229 ; 1900, pp. 44, 57.

Common as a summer-visitor, arriving in April and leaving again in September.

As we have already stated, the deserted nests of Magpies are invariably made use of around Foochow, notwithstanding the fact that trees with convenient nest-holes are abundant. In the mountains, where Magpies are scarce, our collectors state that the Rollers' eggs are laid in holes in trees.

When prospecting for suitable quarters the birds are very noisy and aggressive, but as soon as laying commences they become very quiet, and fly away quickly and silently when the tree is approached.

The eggs, of which there are four to the clutch, are not laid till late in May, as La Touche says: "probably because the Magpies' nests are not available until early in that month." There seem to be two types of eggs :—

(*a*) Larger—intensely glossy china-white and sparsely pitted.

(*b*) Smaller—less glossy and closely pitted.

Occasionally eggs of type (*a*) are speckled with grey, some of them conspicuously so. These markings are sometimes on the surface, at other times within the shell. They may, of course, be, as La Touche says, "a peculiar form of nest-stains," but are difficult to remove and appear like genuine marks.

Twenty-seven eggs average 1·40 × 1·13 in.: the largest 1·50 × 1·14, the smallest 1·31 × 1·07.

CERYLE RUDIS (Linn.).

A very common resident.

We have never taken its eggs, but La Touche once kept some young which were very wild and untamable.

He shot a specimen in March in which the *ova* were largely developed.

CERYLE GUTTATA Vigors.

Resident, but much less common than the last.

We have no notes as to its nidification.

HALCYON SMYRNENSIS (Linn.).

Common and resident.

We have no specimens of its eggs. La Touche reared two or three young birds at Amoy. They fed readily on raw beef and crabs and became very tame.

Halcyon pileata (Bodd.): Ibis, 1900, p. 44.

An egg taken by our collectors in Central Fohkien on May 16th measured 1·22 × 1·06 in.

Alcedo bengalensis Gm.: Ibis, 1892, p. 479.

A very common resident.

We took seven incubated eggs from a hole in a bank by some rice-fields on June 19th, and had two fresh specimens brought to us on July 9th. These nine eggs averaged ·78 × ·69 in. in dimensions, and were intensely glossy in appearance.

The nest-hole is by no means always near water. One pair reared a brood in some ornamental rockwork in a garden; another nested in a hole in a bank facing a lawn-tennis court; while a third frequented a hole in a creeper-covered wall in Rickett's garden, and would in all probability have bred there, had not an attempt on the part of a gardener to catch one of the birds in the hole frightened them away.

In spring these Kingfishers are very noisy and active, chasing each other about at lightning speed even among the houses or through the trees in the gardens, and uttering a shrill "*che-et, che-et.*"

Upupa epops Linn.

A scarce winter-visitor to Foochow, but breeds in the vicinity of Amoy. One of Rickett's collectors saw an individual carrying food at a place close to Amoy early in June, but failed to trace it to its nest.

Cypselus pacificus Latham.

Occurs about Foochow occasionally, generally in damp or rainy weather in April, May, June, or September, but never makes any stay.

Our collectors state that it breeds on the coast.

Cypselus subfurcatus Blyth: Ibis, 1903, p. 217.

Caprimulgus jotaka T. & S.: Ibis, 1900, p. 41.

Breeds on the plains and in Central Fohkien.

Rickett shot a young bird near the settlement (Foochow), with some down still adhering to the plumage, on August 18th. A female shot by him in the Yuen Fu Valley in May contained *ova* no larger than No. 5 shot, so that it is apparently a late breeder. La Touche has a young bird procured up the Yuen Fu on August 28th.

Two eggs, said to belong to this species, were brought to us by our men from Central Fohkien, but are very different from those described by La Touche from Kuatun. They are blotched, not marbled like the Kuatun eggs. The markings are much more numerous and darker, being darkish brown and drab-grey over underlying marks of bluish grey. They measure 1·22 × ·90 and 1·10 × ·86 in.

HARPACTES YAMAKANENSIS Rickett.

No doubt this bird breeds in the Province, but we have no examples of its eggs. It is not uncommon in Central Fohkien in winter. Our collectors did not meet with it when in that district in April and May.

CUCULUS CANORUS Linn.

CUCULUS INTERMEDIUS Vahl: La Touche, Ibis, 1900, p. 45.

Not uncommon, especially the latter, about Foochow in spring. We have, however, no eggs of either species*.

CACOMANTIS MERULINUS Scop.

A summer-visitor to Amoy, but has only once occurred to our knowledge at Foochow ('Ibis,' 1903, p. 217).

COCCYSTES COROMANDUS (Linn.): Ibis, 1900, p. 46.

Our collector came across quite a number of individuals in Central Fohkien in May.

EUDYNAMIS HONORATA Blyth.

During La Touche's first stay at Foochow (1883-87) the Koel was not noticed; it is now a regular summer-visitor. Rickett's first specimen was obtained in 1893.

A female shot on August 5th had one *ovum* more than half an inch in diameter and another about one-third of an inch.

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* We have on three or four occasions obtained eggs that were no doubt those of one of these Cuckoos in nests taken by our men, but it has been impossible to identify them.

An egg in Rickett's collection, answering to the description of that of this species, was taken from the nest of *Graculipica nigricollis* about the end of May. It measures 1·28 × ·95 in.

Centropus sinensis Steph.: Ibis, 1892, p. 480.

A common resident on the plains and low hills.

We have a nest taken on June 21st. It was a bulky mass of "sword-grass." The two eggs it contained were blunt ovals in shape and measured 1·51 × 1·16 and 1·47 × 1·20 in. They were cream-coloured, with shells of a chalky texture.

Bubo ignavus Forst.

Breeds in the vicinity of Foochow.

Two young birds were given to La Touche by a Dominican missionary stationed at Haitan Island, and Rickett has known of several young birds (some in the downy stage) offered for sale in Foochow.

Scops glabripes Swinhoe: Rickett, Ibis, 1900, p. 57.

The eggs referred to in the above-cited paper were taken on May 21st. They were of a rather deep creamy tint, somewhat closely pitted, and measured 1·40 × 1·24 and 1·42 × 1·27 in.

Rickett's collector shot a female on March 28th which contained three well-developed *ova*—the largest, he said, of the size of the top of his thumb. He described the oviduct as much enlarged and flaccid.

Young birds are easily reared on raw meat and become very tame.

Scops stictonotus Sharpe.

Scops latouchii Rickett.

These two Owls are, no doubt, resident in the wooded hills and mountains, but we know nothing of their nidification.

Glaucidium whitelyi (Blyth).

We have only one egg of this very common resident species. It was taken from a hole high up in the trunk of a tall pine, and measures 1·38 × 1·24 in.

Glaucidium brodiei (Burton).

Resident, and not uncommon in the hills and mountains of the Province. We have, however, no examples of its eggs.

Ninox scutulata (Raffles).

A young bird shot in the Yuen Fu Valley in July proves that this species breeds at the lower levels. La Touche does not appear to have met with it in the mountains, and Rickett had only one specimen from Kuatun, which was shot in November.

Pandion haliaëtus (Linn.).

A fairly common winter-visitor. La Touche ('Ibis,' 1887, p. 231) says, "some remain throughout the summer."

Nisaëtus fasciatus (Vieill.).

Resident and not uncommon. It breeds in the hills not far from Foochow and winters on the plains. Two young birds obtained by La Touche on May 22nd were successfully reared. When taken, they differed greatly in size: the smaller had the head almost covered with white down, was darker in colour, and had paler-coloured legs; the larger was lighter in colour, with yellowish or buffy-white edgings to the head-feathers, and very little down adhering thereto. The irides in both were dark brown.

Spizaëtus nipalensis (Hodgson).

Resident and not uncommon in Central Fohkien. It probably also frequents the mountains, but La Touche was unable to identify it at Kuatun, except on one occasion ('Ibis,' 1900, p. 47).

Rickett's collectors took a young bird at Ah Ch'ung in May. It was covered with white down, through which the quills of the feathers were protruding.

The finders described the nest as a huge structure of sticks, big enough for a man to curl himself up in!

Spilornis cheela (Lath.): Ibis, 1900, p. 57.

Fairly common and resident in Central Fohkien.

The crop of one example contained a small snake and a large Mantis.

Rickett had a close view of an individual at Ching Fung Ling on one occasion. It swooped down at a small white terrier that was following him, as he was walking in a thick patch of forest. The bird presented a splendid spectacle as it checked its swoop and remained for a moment almost motionless in the air, its barred wings and tail outspread to their utmost, its bushy crest erect, and its yellow eyes glaring down on the cowering dog. It then swerved to one side, and dashed away through the trees at great speed.

MILVUS MELANOTIS T. & S.

An extremely common resident on the plains, less so in Central Fohkien, and not met with in the mountains. There seems to be a partial migration in summer, as but few are seen about Foochow after the breeding-season until September, when their numbers are again greatly increased. Styan has noted a similar movement as occurring in the lower Yangtze basin ('Ibis,' 1891, p. 490).

This Kite is an early breeder, most eggs being laid by the middle of February; but fresh clutches may be taken in March, or perhaps a little later.

The nest is placed high up in a tall tree, usually a pine, and is a large and conspicuous structure. It is composed of sticks, lined with dry grass and all sorts of rubbish, such as paper, human hair, rags, and bits of matting.

The eggs are usually two in number, but clutches of three are not at all uncommon, and sometimes only a single egg is laid.

Fifty-four eggs average 2·25 × 1·78 in.: the largest of these was 2·48 × 1·82, the smallest 2·11 × 1·76. An abnormally small egg (not included in the above) was 1·99 × 1·58 in. In shape they are somewhat variable, but a broad short ovate or nearly oval form is the most usual.

In colouring they are most variable, and it is rare to find specimens in the same clutch alike. The ground-colour is dirty or greenish white, blotched, spotted, speckled, smeared, or scrawled with bright brick-red, vandyke, or other shades of brown, and sometimes violet. Rickett had a single egg which was dirty white, with only two or three small stains of pale rust-colour. In some cases the markings are very numerous and rich.

The behaviour of the parents is very uncertain. In one instance both old birds had to be shot before it was safe to send a boy up the tree to the nest, which was found to be empty! In another the old bird slipped off the nest containing two downy nestlings and flew away out of sight. At times one parent will attempt to defend the nest, while the other soars about at a distance squealing plaintively.

A newly hatched bird (covered with hairy down) had the bill dusky blue; the iris dark brown; the cere, gape, and eyelids pale grey; the region round the eye and the ear blackish. Lores, forehead, hind-neck, and under parts greyish white; the rest of head silvery grey; the upper part of the body and the wings brownish grey.

The nest-larder contained a "squab" Dove (*Turtur chinensis*).

FALCO SUBBUTEO Linn.

A common summer-visitor to the plains, arriving in April and leaving in October.

It breeds in the deserted nests of Crows and Kites. No eggs are laid much before the end of May, and we have taken incubated specimens as late as July.

The eggs are white, so closely speckled or stippled all over with pale red as to hide the ground-colour; over this stippling there are at times blotches of darker red or a cap of the same, covering one end or the other of the egg. When newly laid they have a beautiful "bloom," which is lost as incubation proceeds. La Touche has an egg, taken from the oviduct of a female, which is pure white with a few "shell-marks" of violet-grey.

Fifteen eggs average 1·58 × 1·25 in.: the largest 1·70 × 1·28, the smallest 1·50 × 1·17.

The parents attack any large birds, such as Crows and Kites, especially the latter, that pass near the nest-tree. They seem to have a great dislike to Kites, and persecute them even after the nesting-season is over. Rickett once saw a male Hobby strike a Kite (*Milvus melanotis*) fair on the back, knocking out a small cloud of feathers !

TINNUNCULUS SATURATUS Blyth : Ibis, 1900, p. 48.

This is apparently a resident race which descends to the plains in winter, at which season we are also visited by *T. alaudarius.*

MICROHIERAX MELANOLEUCUS Blyth : Ibis, 1894, p. 223.

A large series of specimens, obtained since Rickett wrote in the 'Ibis' as quoted above, has confirmed the conclusions then arrived at.

The species is a common resident in Central Fohkien, occasionally straying down to the plains.

An egg, taken from a hole in a tree, was of a blunt oval shape : it measured 1·18 × ·92 in., and was buff-coloured ; the stain, however, readily washed off, shewing the dull white shell beneath. This egg had evidently been laid some time, and was lying on a few butterfly-wings, under which was an old nest of leaves and feathers.

A pair of Falconets were seen about the place and were shot by our collectors, who took from the oviduct of the female a fully formed egg (unfortunately broken), which was white with a few buff marks.

In July our men brought us (alive) a pair of old birds and a fully fledged young female which they had caught in a hole in a tree. There were other birds in the hole, but they escaped.

The male died in about a fortnight, but La Touche kept the two females for fourteen months, during which time he made the following notes on their habits :—

The young bird for some months preferred food taken away from the old one to that provided for itself. It would scream violently, and attempt to snatch away a half-plucked Sparrow from its parent, which would endeavour to protect her property by folding her wings over it, but after a short tussle the young bird always obtained possession of the prey.

They spent most of the day and all the night in a box in their cage. To this box they would retire directly after a meal, and there lie down. Before the box was put into the cage they used to lie on the bottom after a meal, as well as at night, at which time they were very hard to rouse. If an attempt was made to touch them with the hand they would sidle away uttering a low hissing sound. When in the box the young bird would strike fiercely with its talons if any attempt was made to touch it. These birds had a strong and very unpleasant "garlicky" smell.

They were sent home to the Zoological Society's Gardens, where they soon died. An illustration of them appeared in the 'Field' (xci. p. 141, 1898).

Turtur rupicola (Pall.).

A common resident. La Touche notes it as "fairly common at Kuatun."

We have, however, only one clutch of eggs, dated "beginning of May." They measure 1·36 × ·1 and 1·30 × 1·10 in.: one is oval, the other oval pointed at one end. They have but little gloss.

Turtur chinensis (Scop.).

A very common resident.

The nest is the usual flimsy structure of sticks, placed in a tree, high bush, or thick creeper. The eggs are elliptic oval in shape, with (sometimes) one end more pointed than the other.

Seventeen eggs average 1·14 × ·87 in.: the largest 1·20 × ·89, the smallest 1·08 × ·85.

Turtur humilis (Temm.).

Common in summer on the plains. A few individuals winter about Foochow. They nest in trees and lay pale cream-coloured eggs.

A wounded bird brought to La Touche laid an egg on the following day that was of a much deeper colour than usual.

Phasianus torquatus Gm.

Considering that these birds are shot and trapped by the natives at all seasons, and that vermin, furred and feathered, abound, it is wonderful that Pheasants are as numerous as they are on the lower wooded hills of the Province. In the mountains they are less common, as La Touche writes that they "occur sparingly on the grass-lands near Kuatun."

We have no specimens of the eggs, for the birds are scarce enough about Foochow without our encouraging the robbing of their nests.

Phasianus ellioti Swinhoe.

Apparently not an abundant species in the Province (*vide* 'Ibis,' 1900, pp. 49 & 59).

A broken egg said to be that of Elliot's Pheasant was obtained at Kuatun. It is of a rather long and pointed ovate shape, and measures 1·85 × 1·29 in. In colour it is very pale greenish buff.

Pucrasia darwini Swinhoe.

Common in the mountains, whence a doubtful egg, said by the natives to be that of this species, was brought by Rickett's collectors; it was in a very damaged condition, and measured about 1·96 × 1·48 in.

Gennæus nycthemerus (Linn.).

Very common on the hills and mountains of Central and North-West Fohkien.

A clutch of four eggs (two much damaged) from Central Fohkien were said to be those of the Silver Pheasant. One of these eggs measured 1·88 × 1·46 in., another 1·64 × 1·22. The two that were broken apparently matched the larger egg in size.

Ceriornis caboti (Gould): bis, 1900, p. 49.

This species probably occurs on the thickly wooded hills of Central Fohkien, as both Rickett and his collectors have caught glimpses of what they believe to be Tragopans, and the natives describe a bird that can only be of this species.

Bambusicola thoracica (Temm.).

Common throughout the Province in suitable localities.

La Touche has two eggs from Kuatun which measure 1·39 × 1·07 and 1·40 × 1·05 in. Six eggs from Central Fohkien average 1·34 × 1·06.

Coturnix japonica Cassin.

Rickett's collector shot a Quail one spring near Foochow, and took from the oviduct an egg which measured 1·05 × ·85 in. The shell was somewhat rough and pure white. The bird was not preserved, but was probably of this species.

Arboricola ricketti Grant.

We have not yet taken the eggs of this common species in Central Fohkien.

Francolinus chinensis (Briss.).

Common on the low wooded hills around Foochow.

We have made no attempt to obtain the eggs, for the same reason that we do not wish to encourage the taking of Pheasants' eggs.

Turnix blanfordi Blyth.

This is no doubt a resident, but its skulking habits render it hard to observe, and therefore, as Styan says, it seems much scarcer than it really is.

Amaurornis fuscus (Linn.): Ibis, 1892, p. 494 (*Porzana erythrothorax*).

Five eggs average 1·19 × ·90 in. On Sept. 13th Rickett had two newly hatched young brought to him. They resembled those described in the 'Ibis' as cited above. La Touche has a clutch of ten eggs which he doubtfully refers to this species. They are cream-coloured, with fine specks and small spots of burnt-sienna over violet underlying specks. They vary in shape from ovate to oval, with more or less pointed ends.

They average 1·27 × ·93 in.: the largest 1·30 × ·96, the smallest 1·21 × ·90.

Amaurornis phœnicurus (Forst.).

Common in the rice-fields and swampy spots about Foochow in summer, and occasionally to be met with in winter.

We have obtained eggs in the end of April and all through May. They are of a more or less deep tint of cream-colour, spotted and speckled with burnt-sienna and violet over underlying violet marks. The ground-colour often has a pinkish tinge. The spots, which are generally large and elongated, are frequently thickest at the larger end, where they form a small cap.

Twenty-four eggs average 1·61 × 1·19 in.: the largest 1·76 × 1·20, the smallest 1·49 × 1·16.

An egg taken from the oviduct of a bird shot on May 11th was much elongated. It was white, and had a few spots of light red on the larger end, with underlying purple spots.

AMAURORNIS AKOOL (Sykes).

This bird appears to be common in Central Fohkien. The natives say that it breeds in July.

GALLICREX CINEREA (Gm.).

A common summer-visitor about Foochow. We have, however, very few specimens of its eggs.

On August 23rd, La Touche found a nest of this bird in a field of "river-rice." It was a shallow pad of dry rice-blades, those on the outside being twisted into the stalks of the herbage that supported the nest, which was about two feet from the ground. It contained three incubated eggs.

The eggs of this species are greenish cream-coloured or deep creamy buff washed with reddish. Those of the former colour are very glossy in texture, those of the latter much less so. The surface-markings are of a rather pale yellowish red, and in some specimens are small, being much broken up into irregular spots and specks, while in others they form large elongated blotches which are thickly scattered over the whole shell. The underlying spots are pale purple, and are conspicuous in the glossy type.

Six eggs average 1·63 × 1·21 in.

HYDROPHASIANUS CHIRURGUS (Scop.).

This bird is said by the natives to breed near Foochow, but we have never obtained the eggs.

ÆGIALITIS DEALBATA Swinhoe: Ibis, 1892, p. 497.

Three small Plovers' eggs were given to La Touche at Amoy by a Chinese friend. On going to the place where they had been found (a sandy sea-shore), a pair of what La Touche took to be these birds was seen.

These eggs of are a rather deep yellow-buff with small round spots and twisted lines of very deep blackish brown over underlying spots and short streaks of blue-grey. They measure 1·25 × ·91–1·27 × ·93 and 1·31 × ·90 in. This species is resident on the south coast of China.

ÆGIALITIS PLACIDA (Gray).

Apparently resident in the Province, as we have young birds shot in July in the Yuen Fu Valley and have obtained adults in winter.

CHETTUSIA CINEREA (Blyth).

Our collectors shot a female in May near Yen Ping Fu (which is about 140 miles up the Min River from Foochow) with enormously developed ovaries; it was apparently about to breed.

TOTANUS HYPOLEUCUS (Linn.).

A common resident species, but we have never obtained its eggs.

RHYNCHÆA CAPENSIS (Linn.).

Also a common resident. Rickett's collector found a nest with four eggs on a narrow "bund" between two rice-fields. It was a mere hollow in the ground lined with dry grass.

La Touche has an egg taken from the oviduct of a bird shot on June 20th. It measures 1·40 × 1 in. and is ovate in shape. It is of a clear yellow-buff, thickly blotched and spotted with very dark brown, and with a few lines of the same colour, over light brown blotches and spots. There are a very few underlying spots of grey.

On August 31st a native brought to Rickett a bird of this species, from the oviduct of which he had extracted an egg. It was elongated ovate in shape and measured 1·48 × ·99 in. The markings were very small.

This egg by some mischance got mixed up with some eggs presented by Rickett to the British Museum and *someone* has written on it *"Æ. geoffroyi."*

It is, however, undoubtedly the egg of the Painted Snipe, and the eggs collected by Swinhoe in Formosa are, in Rickett's opinion, also those of *R. capensis* *.

? LARUS CRASSIROSTRIS Vieill.

A common resident on the coast. Two eggs taken by a fisherman in July were probably laid by this Gull. They are ovate and pyriform ovate in shape respectively, and measure 2·20 × 1·66 and 2·34 × 1·66 in. In colour they are greenish buff, with small spots and short lines of very dark brown over dark and light purplish-grey spots.

STERNA ANÆSTHETA Scop.

Several adults, together with young in down and eighteen eggs, were brought to us by our men in the first half of July from an island off the coast. The eggs were nearly all incubated.

The ground-colour is greenish white or light buff. The spots are not large and are fairly evenly distributed over the shell. They vary from dark burnt-sienna to madder- and dark vandyke-brown, with underlying spots of various shades of violet-grey.

These eggs were deposited under rocks or stones, and the birds allowed themselves to be caught on their nests.

Seventeen eggs averaged 1·81 × 1·27 in. Young in down were coloured as follows:—

(*a*) (Very young) Drab-grey tinged with buff and mottled with dark brown. Bill blackish. Legs greyish black.

(*b*) Dark grey tinged with buff, faintly mottled with dark brown. Throat and fore-neck dark grey. Under parts greyish white.

(*c*) Same as the last, but lighter.

One young bird was of a very light grey colour.

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* The egg figured in Cat. Eggs Brit. Mus. vol. ii. pl. i. fig. 9, as that of *Ochthodromus geoffroyi* is one of the eggs found by Rickett's collector as stated above.

Sterna dougalli Montagu.

Our collectors brought a number of eggs (from the island mentioned above) which they said were probably these of the present species, as it appeared to be the commonest Tern on the island. A number of these eggs were hatched, but the chicks did not answer to the description of the young in down of the Roseate Tern as given in Yarrell (4th ed.) vol. iii. p. 548. It is therefore unnecessary to describe the eggs from which they were produced. In spite of all La Touche's care these young birds did not live long. It may, however, be of use to give a brief description of them.

There were three types, viz.:—

(*a*) Upper parts mottled grey and black with a slight tinge of buff. Throat the same. Rest of under parts white. Bill deep pink, with black tip. Legs deep flesh-coloured.

(*b*) Upper parts and throat black, mottled with buff. Under parts white. Bill dark dull red with black tip. Legs as in (*a*).

(*c*) Upper parts and throat buff, mottled with black. Under parts white. Bill and legs as in (*a*).

Our men brought us several specimens of the adults, so that there is no doubt as to this species breeding on the coast.

Sterna melanauchen Temm.

From the same island we obtained an adult of this species and a young bird in down, which La Touche reared.

The description of this young bird, as we received it on July 16th, is as follows:—Upper parts greyish white, spotted with black; wings light buff, barred with black; under parts whitish. Bill dark reddish, tipped with black; legs very dark flesh-coloured. When released on Sept. 11th it agreed very well with the description of the young bird given in Cat. B. Brit. Mus. vol. xxv. p. 128. In our bird, however, the bill was blackish, as were also the legs.

Bulweria bulweri Bp.

Our collectors also brought us, from the same island, a dozen eggs of this species with the old birds caught in the nest-burrows. These eggs were all much incubated. They were ovate in shape and averaged 1·70 × 1·24 in.

PSEUDOTANTALUS LEUCOCEPHALUS (Gm.).

This bird occurs near Foochow in summer, but we have no note as to its nidification.

ARDEA CINEREA Linn.

Rickett's collector obtained eleven eggs from a "heronry" near the mouth of the Min River. He said that there were fifty or sixty nests on a huge camphor-tree. They were between one and two feet in diameter, made of sticks, and lined with leaves. The eggs were taken on May 16th and averaged 2·25 × 1·60 in.

HERODIAS GARZETTA Linn.

Before the extermination of this bird to supply the demands of fashion, it was a common summer-visitor and a few remained during the winter.

The nests were built in colonies on large trees, and were composed of sticks lined with dry grass. The eggs were of a rather deep greenish blue. Twenty specimens averaged 1·79 × 1·30 in.

The following notes were made by us at a "heronry" that formerly existed near the bank of the river close to Foochow:—

The nests were placed on two large trees standing close together: a few had eggs (May 3rd), but most of them were in process of construction. It was a busy scene, with numbers of birds passing to and fro with sticks and tufts of grass in their bills or hurrying off for more material. One of each pair seemed to remain by the nest to guard it from robbery. A constant babel of sounds was maintained by guards and workers, varying from a comparatively low "*wah, wah*" to a loud harsh "*wa-a-k, wa-a-ak, wa-a-ak*" when a fight took place. At such times the birds assumed a fierce appearance, and looked very handsome with the dorsal plumes raised in a thick bushy tuft and the crest-feathers standing stiffly out.

HERODIAS EULOPHOTES Swinhoe: Rickett, Ibis, 1903, p. 220.

This species, though by no means so plentiful as the last, used also to breed near Foochow in company with the commoner birds.

Rickett had three eggs taken from the oviducts of birds shot for their plumes. They resembled those of *H. garzetta*, and measured 1·70 × 1·30, 1·74 × 1·36, and 1·83 × 1·31 in.

Two of these eggs appear in Cat. Eggs Brit. Mus. vol. ii. p. 123, under the heading of *Demiegretta sacra* (Gm.), an identification with which Rickett does *not* agree (see 'Ibis,' *l. s. c.*).

HERODIAS INTERMEDIA Wagler.

A much rarer species than either of the foregoing. Rickett had skins procured in April and July, and La Touche ('Ibis,' 1892, p. 488) describes a bird shot at Foochow on May 7th; so that this species might possibly have bred there in bygone days.

BUBULCUS COROMANDUS (Bodd.).

A common summer-visitor.

La Touche has an egg taken from the oviduct of a female shot on May 5th. It is biconical in shape, and measures 1·93 × 1·35 in. Two other eggs in his collection are fusiform and oval respectively with rounded ends. They measure 2·07 × 1·29 and 1·80 × 1·38 in.

All these eggs are very pale bluish green, almost white.

ARDEOLA BACCHUS Bp.

A very common resident. It nests in colonies on trees, sometimes in company with *Herodias garzetta*.

On May 31st La Touche took four clutches of three and five eggs respectively, some being fresh and some incubated; several nests contained young birds. The eggs resemble those of *H. garzetta*.

Seventeen specimens average 1·56 × 1·17 in.: the largest 1·65 × 1·18, the smallest 1·47 × 1·15.

The nests also resemble those of *H. garzetta*; a few of them had leaves on the outside.

NYCTICORAX GRISEUS (Linn.).

Very common in summer. A few may be seen about in the winter months. The birds nest in colonies on large trees, but the natives will not allow them to be disturbed, so we have not obtained the eggs.

Ardetta sinensis (Gm.).

A common summer-visitor.

The only nest of which we have a note was taken by Rickett's collector. It was placed in a bamboo some twelve or fifteen feet from the ground. The materials used were twigs, straw, and bamboo-leaves in great quantity, on the top of which was a slight hollow for the eggs. The man, seeing a large deep-looking nest, bent the bamboo downward, with the result that the five or six eggs rolled out, and all but one were smashed. The specimen saved measured 1·24 × ·92 in. The nest was 10 inches wide by 6 inches deep outside.

Dupetor flavicollis (Lath.).

A common summer-visitor, arriving about the end of April or beginning of May, and leaving in September.

The nest is built at various heights in trees, bushes, or bamboos. One from which Rickett took four eggs was built high up in a large tree standing in the middle of a public road, surrounded by houses and far from any water. Another was in a clump of bamboos near a house in a neighbour's garden. A pair of birds built in this clump every year. As the bamboos kept the breeze off the house it was decided to cut them down, and on July 14th the five downy nestlings were transferred to a wine-case filled with straw and placed in a neighbouring tree. The old birds reared the brood in their new quarters, feeding them morning and evening with small fishes.

The eggs of this species are very pale bluish green, almost white.

Forty specimens average 1·67 × 1·24 in.

Nettapus coromandelianus (Gm.).

On July 22nd Rickett's collector shot a pair of these birds near Foochow, and took from the oviduct of the female a perfect egg, which measured 1·69 × 1·28 in.

A specimen was obtained in Central Fohkien in May.

Æx galericulata (Linn.).

A common resident. We have not obtained its eggs.

Anas zonorhyncha Swinhoe.

Also a common resident. Rickett has the skins of two young in down. La Touche took nests and eggs at Swatow ('Ibis,' 1892, p. 491).

Podicipes philippensis (Steph.).

A common resident. About the end of July Rickett's collector shot two young in down near Foochow. He said that there were three swimming about with the old bird in a large pond.

III.—*On the Birds of the Upper Muonio River.*

By S. A. Davies, M.B.O.U., Lieut. East Lancashire Regiment.

In April, 1904, I made a three months' expedition to the upper waters of the River Muonio, which are locally known as the Kongämä, where I was joined three weeks later by Mr. John Stares.

The Muonio rises in 69° 10′ N. lat. and enters the Gulf of Bothnia in 65° 50′ N. lat., forming the boundary between Sweden and Finland, but we contented ourselves with working the Kongämä between 69° and 68° 30′ N. lat., the latter being the northernmost limit of the pine-forests. I had previously visited the district in 1895, when I was too late for the best of the breeding-season, though I was successful in obtaining eggs of the Jack-Snipe; and in the following year the late Daniel Meinertzhagen spent a season there on my advice, making his headquarters at Muonioniska, which was the centre of operations of John Wolley. The difficulty of getting about at such a season of the year in a country where there are practically no means of communication necessarily confined our operations to a somewhat limited area, and we therefore chose the upper waters, where we thought that we should have the best chance of Ducks, Waders, and mountain-birds, although in so doing we sacrificed our opportunities of observing the Owls, Woodpeckers, and so forth, which are found in the true forests.

We were greatly handicapped by an exceptionally late season, at least three weeks later than the ordinary. On the 1st of June we were still sledging on the frozen river, which is generally clear by the 10th of May. This cause considerably retarded the arrival of the birds; thus the breeding-season was shorter than usual, the early breeders being late and the late breeders punctual, so that we found it impossible to manage everything in so short a time. For the purposes of observation we established ourselves at two stations: one at Leveavuopio in the north of our district (69° 50′ N. lat.), and the other at Ainettivaara on the edge of the pine-forests (69° 30′ N. lat.)

A considerable trade in egg-collecting is still done on the Muonio, and has been going on ever since John Wolley, whose name is to this day revered by the Finns, made Muonioniska his headquarters. The eggs are sent to dealers in Helsingfors, who pay a good price for those of the rarer species; but it is difficult to understand how they find a market, as the specimens are not kept in clutches or identified in any way. I do not think, however, that this collecting has an appreciable effect on the birds as a whole, for the area is so vast and habitations are so scattered that the damage done is infinitesimal, except in the case of certain species, such as the Gyr-Falcon, which is becoming very scarce owing to its frequenting the same breeding-places every year and being annually robbed.

The Finns, as a whole, have a good general knowledge of their birds—the value of the eggs has probably much to do with it,—and, though they do not possess the marauding instinct of the English village-boy, they are keen, so far as it is possible for them to be keen, and throughout the country birds are one of the staple subjects of conversation, which suits the Northern Finn much better than hard work. The natives are excellent at imitating the notes of the various species, the Finnish names of which are often very expressive.

I append some notes on the species observed.

Turdus musicus. *Song-Thrush.*

Though we never met with this species, we saw some of its eggs in an old collection at Kaaresuando (68° 25′ N. lat.), which is probably its northernmost limit on the river.

Turdus iliacus. *Redwing.*

This bird arrived on the 15th of May. It was very common and generally distributed, preferring the immediate vicinity of the river. We did not find it breeding in company with the Fieldfare, but always singly. The first clutch of eggs was taken on the 5th of June. The song was one of the features of the Lapland summer, and appeared to vary every ten miles or so; the Redwings at Ainettivaara had a totally different song from those at Leveavuopio. We often found their nests built in the rough fences and some on the lowest of stumps. As a rule, they were never more than four feet from the ground. Each clutch contained one egg of a type distinct from the rest, brighter and more richly marked. The usual number was six. The Finnish name of this species is "Night-Thrush."

Turdus pilaris. *Fieldfare.*

The Fieldfare arrived on the 25th of May: on the 26th it was generally distributed in the birch-woods. The colonies were usually some way up the hill-sides, but occasionally we found them breeding on islands in the lakes—a fact which may be due to their preference for the big birches of twenty feet or more, which are not found in the neighbourhood of houses, owing to the ruthless felling of timber which prevails. I only once heard the song, which was uttered on the wing. We found the first clutch of eggs on the 4th of June. The nests of the former year were generally re-occupied, a fresh lining of grass only being added. On the 15th of June we saw some young birds just hatched.

Turdus torquatus. *Ring-Ousel.*

Very rare, even in the mountain-districts of the north. We obtained one clutch of eggs on the 26th of June.

SAXICOLA ŒNANTHE. *Wheatear.*

Very common on the fells, breeding high up on the hill-sides above the limit of the dwarf willow, as well as in the valley-bottoms. The nest is invariably lined with the white feathers of the Willow-Grouse. This bird arrived on the 28th of May, and began building on the 5th of June. The Finnish name signifies "Stone-Thrush."

RUTICILLA PHŒNICURUS. *Redstart.*

Not common; we obtained a few nests round Ainettivaara, where the bird bred in the old Woodpeckers' holes in the birches, lining its nest with the fur of the Arctic Hare and the Lemming and the feathers of the Willow-Grouse.

CYANECULA SUECICA. *Bluethroat.*

Very common throughout the district, in the fir-region as well as in that of the birch. It prefers low-lying moors, where the dwarf willow and the cloudberry form the prevailing vegetation. The nests were invariably well-concealed, either under a stump or in the side of a tussock; but I cannot agree with the late Mr. Wheelwright as to the difficulty of finding them, for we never failed to secure them by beating over likely ground about 9 P.M., at which time the parents appear to cover their eggs. The Finnish name signifies "Hundred-tongues," from the bird's imitative capacities, which are little short of marvellous and often a nuisance to the collector. I heard a newly-arrived example utter a note like that of the Red-wattled Lapwing, with which I am familiar in India. The Bluethroat arrived on the 25th of May, and we found the first clutch of eggs on the 9th of June. There were often seven in a nest.

ACCENTOR MODULARIS. *Hedge-Sparrow.*

I saw a single specimen taking shelter from a snow-storm in a shed at Ainettivaara on the 14th of May.

PHYLLOSCOPUS TROCHILUS. *Willow-Wren.*

Very common in the birch-woods; it lines its nest with the white feathers of the Willow-Grouse, whence comes its

Finnish name of "Willow-Grouse bird." We did not come across Eversmann's Warbler (*P. borealis*), which occurs on the Porsanger Fjord in Norway.

Cinclus melanogaster. *Black-bellied Dipper.*

This Dipper was very sparingly distributed; its scarceness was probably due to the fact that there were very few suitable nesting-sites for it on the Kongämä. Such places as were suitable were invariably occupied, and the nest, a large domed structure with a neat cup of grass-bents, was placed in an exposed position with no attempt at concealment, so close indeed to the water that in three cases noticed it was washed away by the heavy floods. Once we found an unlined "cock's nest" placed immediately above the nest proper. This species is one of the few that remain all the year round in the neighbourhood, frequenting the rapids, which are open even in the depth of winter.

Parus sibiricus. *Lapp Tit.*

This species is very sparingly distributed, but is most common in the fir-region. It is resident, but apparently subject to local migrations, as is the case with the Woodpeckers. It is very inconspicuous and silent. The nests were excavated, apparently by the bird itself, in birch-stumps, and were lined with lemming-fur. This was the only species of Tit that we met with.

Motacilla alba. *White Wagtail.*

Every house had a pair or two of these birds round it, but as there were barely a dozen houses in the whole district they cannot be called common. The nests were usually built in the cow-byres. This species was one of the first to arrive (on the 27th of April), and very miserable the birds looked huddling together for shelter in the old Martins' nests under the eaves in the intense cold which prevailed at the beginning of May. They began nesting on the 24th of May, and the first egg was found on the 5th of June.

Budytes viridis. *Yellow Wagtail.*

Very common throughout the district, breeding in the same localities as the Bluethroat. The nest is very difficult to find, as it is usually well concealed under a tussock or stump, and the birds are very watchful, leaving long before an intruder approaches. This bird arrived in large numbers on the 26th of May, and we found the first clutch of eggs on the 17th of June.

ANTHUS PRATENSIS. *Meadow-Pipit.*

Fairly common in the lower part of the district; on ascending the river its place is gradually taken by *A. cervinus*, until at the head-waters it is comparatively rare.

ANTHUS CERVINUS. *Red-throated Pipit.*

Very common on the bogs and moors at the head of the river; further down it becomes rare, and we did not meet with it at Ainettivaara. Its distribution is practically the same as that of the Lapp Bunting. The song is very full and varied and contains passages recalling that of a Canary. The eggs often approximate to the Bunting type, whereas the eggs of the Lapp Bunting never approach the true Pipit type. The nests were placed in the sides of tussocks on the cloudberry bogs. The birds arrived on the 5th of June; we found the first clutch of eggs on the 17th and young on the 2nd of July.

LANIUS EXCUBITOR. *Great Grey Shrike.*

Sparingly distributed, in fact so scattered as to be almost rare. We took one clutch of nine eggs, seven being the usual number. The nest was always plentifully lined, usually with white Willow-Grouse feathers; in the fir-region, however, at Ainettivaara, they were replaced by those of the Capercaillie.

HIRUNDO RUSTICA. *Swallow.*

We saw one example of this species on the 25th of May, but the bird is not known to the natives and it was therefore probably on migration. The Muonio Valley appears to be a migration-route to the warmer coasts of Norway, as we saw several birds on passage which certainly do not breed in the district.

Chelidon urbica. *Martin.*

Very common round the houses, where it is encouraged by the Finns, who nail up thin planks under the eaves to support the nests. It arrived on the 25th of May, when the river was still frozen and the land was covered with snow.

Cotile riparia. *Sand-Martin.*

The northernmost colony of this species noticed was in 68° 25′ N. lat., below Ainettivaara, where there was a cliff of sand above a bend of the river. The eggs were laid in the last week in June.

Passer montanus. *Tree-Sparrow.*

We saw five individuals of this species at Leveavuopio on the 28th of May, and one of them stayed for a few days, but disappeared early in June. We did not notice them breeding.

Fringilla montifringilla. *Brambling.*

The Brambling was very common in the birch-woods, both low down in the vicinity of the river and up the hills as far as the birch-growth extends. It arrived on the 24th of May and by the 26th was generally distributed. We found the first eggs on the 15th of June, but took fresh specimens late in July. Seven in a clutch were not uncommon. They vary greatly in size and type, and one of a clutch is often very much larger than the rest.

Linota linaria. *Mealy Redpoll.*

This species is common in the tall willow-scrub, and especially frequents islands in the lakes and rivers. It is a late breeder and we did not find eggs till the 18th of June.

Pinicola enucleator. *Pine-Grosbeak.*

We did not observe this species in the birch-region; it appeared to be confined to the fir-region, where it was fairly plentiful. Small flocks arrived at Ainettivaara on the 9th of May, and were all in pairs the next day. At this season the birds were very tame and we could approach so near as almost to catch them by the hand. The first egg was found on the 12th of June; only in one case did we obtain a clutch of four, the usual number appearing to be three. The nests were placed in young firs about 4 or 5 feet from the ground.

EMBERIZA HORTULANA. *Ortolan.*

I observed and shot a single specimen at Ainettivaara on the 27th of April; it was singing on the roof of a barn in a snow-storm. This species seems to be very rare, but we obtained one nest on the 27th of June at Isosaari in 68° 40′ N. lat., which is probably its extreme range on this river.

EMBERIZA SCHŒNICLUS. *Reed-Bunting.*

Fairly common throughout the district in the willow-scrub fringing the river. The Finns did not distinguish it from *Calcarius lapponicus.*

CALCARIUS LAPPONICUS. *Lapland Bunting.*

Very plentiful in the northern part of the district, but becoming scarce as the fir-region is approached. It arrived in large numbers at Leveavuopio on the 24th of May, when the birds were singing in the birches round the house. They prefer the cloudberry-moors, where the site of the nest is constantly betrayed by the male, who sits on a perch within a few yards of it uttering his metallic double call. The nest is always lined with feathers, though often sparingly. The eggs vary greatly both in size and colouring, one type being indistinguishable from one form of those of the Red-throated Pipit. The female is very tame when sitting.

PLECTROPHENAX NIVALIS. *Snow-Bunting.*

I first saw Snow-Buntings in flocks on the Norwegian-Finnish Frontier on the 23rd of April. At that season they were found round the houses in company with Shore-Larks, picking up what they could from such small patches of ground as were bare of snow, but the two species always kept separate in the flocks. About the beginning of May the Buntings left the houses and went up into the hills: the last we saw of them there was on the 17th of May, but we could not find them breeding on the fells.

Perisoreus infaustus. *Siberian Jay.*

Though plentiful in some years, these birds were scarce in the fir-region at the time of our visit and we only succeeded in finding three nests. By the 9th of May the eggs were hatched.

Pica rustica. *Magpie.*

The northernmost limit of this species in the district appears to be 68° 40′ N. lat., where we saw two pairs. The Magpie is not protected as in Norway, but is persecuted by the Finns on account of the damage that it does to the nests of the House-Martin, which is considered sacred.

Corvus corax. *Raven.*

Sparingly scattered throughout the district and breeding in suitable localities in the northern parts.

Corvus cornix. *Hooded Crow.*

This species does not appear to breed north of the fir-region. I found one nest at Ainettivaara on the 6th of May, and saw some individuals in the northern districts; but we observed none breeding there, and the Finns declare that they nest only in fir-trees.

Alauda arvensis. *Skylark.*

On the 19th of May we saw one specimen, evidently on migration, sitting on the ice.

Otocorys alpestris. *Shore-Lark.*

This species was first seen in company with the Snow-Buntings round the houses at the end of April. As the snow melted, the birds moved up the lower hill-sides, nesting at an elevation of some 2000 feet, in the same localities as the Dotterel. Occasionally they breed lower, as does the Golden Plover, and we found a nest close to the river on the 15th of June with the eggs nearly hatched. This was, however, on a dry undulating moor covered with grey lichen and closely resembling the ground on the hill-tops. The nest is extremely difficult to find, as the parents give no indications of its whereabouts.

Picoides tridactylus. *Three-toed Woodpecker.*

We saw only one Woodpecker during the whole of our stay, and obtained but one clutch of eggs. Yet we examined over five hundred nesting-holes, of which the bigger birch-woods were full. The Finns themselves were surprised at the scarcity of Woodpeckers, Tits, and Siberian Jays during the season, a fact which can only be accounted for by supposing that they are capricious in their local migrations.

Cuculus canorus. *Cuckoo.*

Fairly common; it arrived at Leveavuopio on the 28th of May. Although we examined some hundreds of the smaller birds' nests, we were not successful in finding any eggs of the Cuckoo in them.

Asio accipitrinus. *Short-eared Owl.*

Fairly plentiful and distributed evenly all along the river. It arrived at Ainettivaara on the 28th of April, and was to be seen every evening hawking above the frozen river or sitting motionless on a roof or post. At this season the cry resembled the barking of a dog, but as soon as the breeding-season began it changed to the extraordinary call "Poomp-poomp," from which the Finnish name "Pumpo-haukka" is derived. The males were then to be seen soaring and hovering in the air, occasionally stooping as a Snipe does when he drums, and at the same time making a loud snapping noise with the bill. We found the first eggs on the 6th of June. These were laid under a ling-bush in an open meadow not two hundred yards from the house at Ainettivaara.

Nyctea scandiaca. *Snowy Owl.*

We saw only one of these birds, and, although in the preceding season they had been abundant, none bred on the fells at the time of our visit. Yet lemmings were then very plentiful, so that there was an abundant food-supply; the lemmings appear, however, to have been still more numerous the year before, so possibly the Snowy Owls anticipated a dearth and shifted their quarters accordingly. A Lapp brought us in a clutch of eggs from Tuoipala in Norway on the 20th of June.

CIRCUS CYANEUS. *Hen-Harrier.*

Sparingly distributed along the river. We saw a pair just below the 69th degree of latitude and found a nest in lat. 68° 45′. The birds arrived at Ainettivaara on the 14th of May.

BUTEO LAGOPUS. *Rough-legged Buzzard.*

Very common, especially in the mountain-districts. We found over forty nests. The birds had already arrived on the 23rd of April, and on the 25th I saw a pair building. This nest, the first that we observed, had four eggs on the 15th of May. Four appears to be the usual number, though three often composed the clutch and at times we found five. As nesting takes place when the ground is still covered with snow, it is possible to determine the likely sites from a distance of several miles; and once the cliffs are approached the birds betray the existence of the nest by flying round and screaming. The female is conspicuously larger than the male and her cry deeper and hoarser. The eggs were laid between the 15th and the 25th of May. The same breeding-place is occupied year after year, several old nests being often found close to the new. In one case I found the structure overthrown by an avalanche, the eggs lying unbroken in the snow beneath the cliff. The birds had constructed a second nest in the old spot, where the female was sitting on three eggs. The sites are usually fairly easy of access, except for the danger of slippery ice-slopes.

I took a clutch of five eggs from the same nest from which I had obtained a young bird in 1895. This bird is still alive and has laid eggs in captivity.

AQUILA CHRYSAËTUS. *Golden Eagle.*

We saw immature birds in June, and in April a pair began to nest near Leveavuopio, but were turned out by a pair of Rough-legged Buzzards. This species is very rare in the district.

ASTUR PALUMBARIUS. *Goshawk.*

A few pairs were found breeding round Ainettivaara, but they were much scattered. We obtained only two nests, the first eggs being laid on the 1st of May. The structure was very bulky, like that of a Sparrow-Hawk exaggerated, and the cup was neatly lined with green fir-shoots. The Finnish name means "Capercaillie-Hawk."

FALCO GYRFALCO. *Gyr-Falcon.*

This species is becoming very rare. The Helsingfors dealers offer four shillings apiece for the eggs, and in consequence the nests are robbed by the Finns wherever they are accessible. When eventually the birds take to a new breeding-place it is generally inaccessible, and they appear to be moving to the Norwegian side of the frontier, where the country is more mountainous. The first eggs were laid on the 24th of April.

FALCO ÆSALON. *Merlin.*

Fairly common, especially in the fir-region, where it nests exclusively in trees. We obtained seven nests, all built on firs, from the Ainettivaara district. The birds arrived on the 15th of May, and we took the first eggs on the 12th of June.

PANDION HALIAËTUS. *Osprey.*

The fir-woods at Ainettivaara are not large enough to afford suitable breeding-trees for this species, and it is consequently rare. We obtained one nest only, on the 25th of June. This species arrived on the 11th of May.

ANSER ERYTHROPUS. *Lesser White-fronted Goose.*

This Goose was very common on the river, breeding in the larger morasses of the birch-region. It arrived on the 23rd of May, and flocks were to be seen throughout the season—a large number of the birds appearing not to breed at all. We found the first of our nests on the 6th of June. They are always placed on small elevations in the bogs, which resemble miniature islands. The cry of this Goose is very high-pitched and shrill. When first disturbed the flocks always fly up within shot, apparently to inspect the intruder.

ANSER SEGETUM. *Bean-Goose.*

Plentiful on migration, arriving on the 11th of May. We could not, however, find the breeding-places and did not see any birds in June.

ANAS BOSCHAS. *Mallard.*

Rare, but we saw a few pairs just below the 69th degree of latitude, which were evidently breeding. It was first met with on the 13th of May. Like the Common Redshank, it seems to be confined to the head-waters of the river.

DAFILA ACUTA. *Pintail.*

Very common, and one of the earliest Ducks to appear (15th of May). It arrives paired, and is first seen sitting on the small patches of open water above and below the rapids. The nests are often situated some distance from the river. We found the first on the 9th of June, placed in a hummock in a wet swamp under some dwarf willow-bushes.

QUERQUEDULA CRECCA. *Teal.*

Fairly common, arriving on the 18th of May. Like the last-named species, the Teal often breeds at some distance from the water, and hence the nest is only to be found by beating. We obtained the first on the 21st of June.

MARECA PENELOPE. *Wigeon.*

Very common. It arrived on the 19th of May and bred in the neighbourhood of the river. The first eggs were found on the 7th of June.

FULIGULA CRISTATA. *Tufted Duck.*

Arrived on the 15th of May. It was fairly common, breeding in small ponds and inlets close to the river.

FULIGULA MARILA. *Scaup.*

Very common, breeding on small rocky islands. Many nests were washed out by the heavy floods which came down in the middle of June.

CLANGULA GLAUCION. *Golden-eye.*

Does not breed further north than the extreme limit of the fir-trees at Ainettivaara. Even there the trees are not of sufficient size to afford nesting-holes, and the eggs are all laid in boxes put up for the birds' accommodation. We often saw them thirty or even forty miles more to the north, so that they would probably breed there if boxes were provided for them. The first clutch of eggs was found on the 10th of June.

HARELDA GLACIALIS. *Long-tailed Duck.*

Very common, arriving on the 25th of May; the first eggs were found on the 23rd of June, and flappers were seen on the 9th of July. It nests on the moors in the neighbourhood of small pools and tarns.

ŒDEMIA NIGRA. *Common Scoter.*

Very common, arriving on the 20th of May. The first eggs were found on the 16th of June.

ŒDEMIA FUSCA. *Velvet Scoter.*

Not so common as the preceding species, and less easy to locate in the breeding-season, as it retires to the fell lakes.

MERGUS MERGANSER. *Goosander.*

Fairly common on the river and the lakes adjoining it.

MERGUS SERRATOR. *Red-breasted Merganser.*

The commonest of the Duck family on the river. It especially frequents the rapids, and every island is tenanted by one or two pairs. The Finns take the eggs for food. It arrived on the 16th of May, and the first egg was found on the 5th of June.

TETRAO UROGALLUS. *Capercaillie.*

These birds were unusually scarce during our visit, and we found only one nest. In the winter they move out of the fir-region, and we saw them sixty miles north of Ainettivaara. At this season they are very silent and difficult of approach, the noise of the "ski" warning them. As soon as the "play" begins, however, they may be heard miles away.

LAGOPUS ALBUS. *Willow-Grouse.*

Common, but steadily decreasing in numbers owing to persecution. The Finns carry on a great trade in these birds in winter by snaring and shooting them, and then taking them over to the markets in Norway, where they fetch on an average sixpence apiece. By imitating the hoarse crow of the male or the mewing note of the female, the natives manage to creep within a few yards, and the cheap Belgian breech-loader does the rest. On warm days in the snow these birds are very tame, becoming wild with the approach of harder weather. When sitting the female is often very confiding, and we took a photograph within three feet of one without any screen.

Lagopus mutus. *Ptarmigan.*

Not common, but a few pairs are to be seen on every high fell-top. Mr. Stares secured photographs of a sitting hen, which allowed him to stroke her on the nest.

Fulica atra. *Coot.*

I saw a stuffed specimen in a house on the Norwegian side in lat. 69° 20′ N. which the owner had shot there.

Grus communis. *Crane.*

Muonioniska still appears to be the northernmost breeding-limit of this species, as in John Wolley's day. It is, however, occasionally seen up the valley on migration, and one was shot at Koski-saari on the 7th of June.

Eudromias morinellus. *Dotterel.*

Fairly common in the mountain-districts, preferring flat-topped hills with an elevation of 2000 feet or more. The nests found were all in the vicinity of water, on flat moss-covered uplands interspersed with small pools formed by the melting snow. The birds were very confiding and would run about within a few feet of us: we succeeded in obtaining several photographs at a distance of only three feet. They sit very closely and the nest is only to be found by stumbling on it, unless the female is off the eggs, when she may be easily watched on.

Ægialitis hiaticola. *Ringed Plover.*

Fairly common on the edges of such lakes as have spits of sand by them. It arrived on May 27th in company with Dunlins, Temminck's Stints, and Little Stints. Eggs were found on the 30th of June on the point of being hatched.

CHARADRIUS PLUVIALIS. *Golden Plover.*

These birds arrived on the 14th of May. At first they frequented the moors in the neighbourhood of the river, and even after they had retired up the hill-sides to nest they came down daily to feed, puzzling us considerably for some time. Occasionally a pair bred low down, as in the case of the Shore-Lark. We found the first nest on the 7th of June. The females sit very closely, but if off the eggs are easily watched on. As soon as they have young they bring them down to the lower grounds.

VANELLUS VULGARIS. *Lapwing.*

Very rare and unknown to the Finns generally. I obtained one clutch of eggs, however, from 68° 25′ N. lat., which were brought in by a Finn, who accurately described the bird and thought it a great rarity.

PHALAROPUS HYPERBOREUS. *Red-necked Phalarope.*

This species was very common, and arrived on the 2nd of June; we found the first eggs on the 21st of June. The parents generally betray the presence of the nest by swimming about excitedly while uttering their sharp "*tirr-tirr.*" The Finnish name is "Water-Swallow."

GALLINAGO CŒLESTIS. *Common Snipe.*

Common on the upper reaches of the river, where the birds were to be heard drumming throughout the spring. They arrived on the 24th of May.

GALLINAGO GALLINULA. *Jack-Snipe.*

I saw only one example of this species and was unsuccessful in finding the nest, which, however, I had obtained in the same district in 1895.

TRINGA ALPINA. *Dunlin.*

Does not breed in the district. We saw flocks on migration at the end of May.

TRINGA MINUTA. *Little Stint.*

We saw flocks on migration in company with Ringed Plovers, Dunlins, and Temminck's Stints.

TRINGA TEMMINCKI. *Temminck's Stint.*

Common. Arrived on May 25th. We found the first egg on June 18th. The favourite breeding-places were grass-meadows, especially those on islands, and a great many nests were washed out by the heavy floods. The parents were very noisy at the nest, flying round and round and soaring in the air while uttering their chirruping breeding-song.

MACHETES PUGNAX. *Ruff.*

Common. Many arrived on the 25th of May and immediately started "hilling." They were still "hilling" on the 19th of June. A great number of nests were swamped by the floods. We found the first eggs on the 13th of June.

TRINGOIDES HYPOLEUCUS. *Common Sandpiper.*

Very abundant throughout the district, where it arrived on the 27th of May, the first eggs being found on the 16th of June. Occasionally it breeds at some distance from the water, and Mr. Stares found a nest quite half a mile away from the nearest lake on the slopes of a low birch-clad hill. In this case one of the birds flew off the nest, but they were usually very wary and left long before we approached. They prefer islands, and the nest is usually under the shelter of a stump or branch.

TOTANUS GLAREOLA. *Wood-Sandpiper.*

Very common. It arrived on the 25th of May, and the first eggs were found on the 16th of June. This species is very noticeable in the nesting-season, owing to its breeding-note "*leero-leero-leero,*" uttered as it soars on the wing. The Finnish name is "Leero." The eggs are only to be found by stumbling on them. I obtained one clutch from the old nest of a Great Grey Shrike placed in the fork of a birch some twenty feet from the ground; this bears out the observations made by Mr. H. L. Popham on the Yenisei.

TOTANUS CALIDRIS. *Redshank.*

Rare. There were a few individuals, however, at the head of the river, where we found one nest.

Totanus fuscus. *Spotted Redshank.*

The breeding-range of this species does not appear to extend far above the limit of the fir-region. We found none in the upper parts of the district, but about Ainettivaara it was numerous in the bogs. John Wolley found it nesting away from the marshes, but we found it always in them. In one case I flushed a male from the nest, and a Finn who was with me once knocked down a male as it swooped near him with its breast almost denuded of feathers. This seems to point to the fact that the male commonly incubates. The birds are very wary and when disturbed at their feeding-grounds behave exactly as if they had eggs. Hence it is impossible to tell the whereabouts of the nest from their actions, and it is only to be found by stumbling on it. It is a mere scrape in a hummock on a cloudberry-bog. The first eggs were found on the 9th of June.

Totanus canescens. *Greenshank.*

This species is very common and is one of the characteristic birds of the Lapland summer, its cry "*vikla-vikla-vikla*" (whence the Finnish name "Vikla") being heard day and night. As in the case of the preceding species, the nest is to be found only by luck, and in this case the difficulty is accentuated by the fact that the Greenshank does not breed on the lower grounds but on the birch-clad hills. It arrived on the 23rd of May, the first eggs being found on the 10th of June.

Numenius phæopus. *Whimbrel.*

Numerous, especially in the lower mountain-districts immediately north of the fir-region. At the head of the river there were none. It breeds on dry moors fairly close to the river. Unless the breeding-grounds have been much disturbed it is easily watched to the nest. The first eggs were found on the 6th of June.

Sterna macrura. *Arctic Tern.*

Fairly common, though not so plentiful as in 1895. It frequents the shallower lakes and breeds in scattered pairs on the islands. It arrived on the 25th of May.

Stercorarius parasiticus. *Buffon's Skua.*

This species was very plentiful during the time of our visit, and we were enabled to examine a large series of its eggs. The usual breeding-places are in the higher fell-morasses, though occasionally it nests close to the river—never, of course, in the fir-region. The principal food seems to be decayed lemmings; it appears to prefer them in this state, as we found "larders" of lemmings in various stages of decomposition round the nests, and the birds when skinned gave out a most offensive smell. They betray their nests by flying round and hovering like Kestrels while uttering their chough-like cry "*jeou-jeou.*" The Finnish name is "Kihu." Occasionally the eggs are of a beautiful sky-blue ground-colour without spots.

Larus argentatus. *Herring-Gull.*

We saw a few on migration in May.

Larus glaucus. *Glaucous Gull.*

We saw one on migration in May.

Colymbus septentrionalis. *Red-throated Diver.*

Fairly common, especially on the higher lakes towards the frontier of Norway.

Colymbus arcticus. *Black-throated Diver.*

Fairly common.

IV.—*Remarks on Schaeffer's 'Museum Ornithologicum'* *.

By P. L. Sclater, D.Sc., F.R.S.

In the last number of this Journal ('Ibis,' 1904, p. 550) Dr. Hartert stated his opinion that the generic terms proposed by Schaeffer in his 'Museum Ornithologicum,' published in 1789, "are not admissible," because the author "did not use binomial nomenclature." I do not quite agree with Dr. Hartert on this subject, and I trust that he will excuse me if I explain my reasons for taking a different view.

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* 'Museum Ornithologicum, exhibens enumerationem et descriptionem Avium, quas novâ prorsus ratione sibi paratas in Museo suo asservat Diacobus Christianus Schaeffer.' Ratisbonia, 1789.

Diacobus Christianus Schaeffer, whose writings seem to have been mostly on entomology, published two ornithological works—the 'Elementa Ornithologica' in 1774, and the 'Museum Ornithologicum' in 1789. In the first of these Schaeffer used no specific terms, and his genera, therefore, cannot be accepted. But the second work, published in 1789, twenty-three years after the issue of the twelfth edition of the 'Systema Naturæ,' cannot be so easily disposed of. Schaeffer's 'Museum Ornithologicum' consists of an enumeration and description of the specimens of birds in his own Museum, "prepared in a new way." Two hundred and twenty-nine specimens are catalogued, and referred to fifty-nine genera. At the head of each species stands the name in three languages—Latin, German, and French. Thus No. 3 of Schaeffer's 'List' is designated

"COLUMBA PALUMBUS. LE PIGEON RAMIER. RINGELTAUBE,"

after which follows a short Latin diagnosis and references to previous authorities—usually Brisson, Linnæus ('Systema Naturæ,' 12th edition), and Buffon, besides others. The whole of the two hundred and twenty-nine *Latin* names of Schaeffer in the work are binomial, with the following five exceptions :—

No.	Name.	Page
26.	*Accipiter Circus major*	8
83.	*Passer Passerculus Bononiensis*	25
84.	*Passer Linaria vulgaris*	26
108.	*Alauda cristata minor*	32
251.	*Psittacus amazonicus fronte luteo* . . .	45

Now it seems to me to be rather hard to refuse to recognise the generic names established in the present work because, out of some two hundred and twenty specific names, five are not strictly binomial. Trinomials, we know, are much in vogue at the present time, and I have heard that the idea of such names as quadrinomials is entertained, so we should not be too severe on Schaeffer's slight lapses from orthodoxy.

Let us now consider Schaeffer's fifty-nine generic names used in the present work, which are mostly those propounded in his former work, the 'Elementa Ornithologica,' though some are additional. Of these fifty-nine generic names, thirty-three are the same as those employed by Linnæus in the twelfth edition of his 'Systema Naturæ' (1766), which is always quoted by Schaeffer; but twenty-six are new and adopted from Brisson, of whom Schaeffer appears to have been a great admirer. The following is a list of these twenty-six generic names, and of the first species mentioned under each of them, which we may look upon as the type of the genus intended by Schaeffer, unless there is some reason to the contrary:—

List of Schaeffer's new Generic Names.

No.	Genus.	First Species.	Page
II.	Lagopus.	Lagopus urogallus	2
III.	Perdix.	Perdix perdix	4
V.	Accipiter.	Accipiter nisus	6
VI.	Aquila.	Aquila nævia	9
VII.	Asio.	Asio bubo	10
X.	Pica.	Pica pica	13
XI.	Garrulus.	Garrulus glandarius	14
XII.	Nucifraga.	Nucifraga caryocatactes	14
*XIII.	Galgulus.	Galgulus garrula	14
XXI.	Carduelis.	Carduelis carduelis	23
XXII.	Passer.	Passer domesticus	24
XXIII.	Coccothraustes.	Coccothraustes coccothraustes	28
XXV.	Pyrrhula.	Pyrrhula rubicella	30
XXVIII.	Ficedula.	Ficedula hippolais	33
XXXII.	Mellisuga.	Mellisuga moschitus	41
*XXXIII.	Torquilla.	Torquilla iynx	42
*XXXVII.	Ispida.	Ispida ispida	47
XLII.	Limosa.	Limosa totanus	52
XLIV.	Numenius.	Numenius arquata	54
XLV.	Ciconia.	Ciconia alba	55
XLVII.	Gallinula.	Gallinula chloropus	58
L.	Uria.	Uria grylle	60
LI.	Fratercula.	Fratercula arctica	61
LIV.	Stercorarius.	Stercorarius parasiticus	62
LVII.	Merganser.	Merganser raucedula	66
LVIII.	Anser.	Anser ferus	68

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* These three names must of course give way to the corresponding terms (*Coracias*, *Iynx*, and *Alcedo*) used by Linnæus for the same genera.

Now it is well known that in the Stricklandian Code of Nomenclature, which most of the older Ornithologists are content to follow, the twelfth edition (1766) of the 'Systema Naturæ' was adopted as the initial point of binomial nomenclature. But a reservation was made in favour of the genera established in Brisson's 'Ornithologie' of 1760. This reservation has been widely adopted, and many of Brisson's generic terms (*Perdix*, *Accipiter*, *Aquila*, &c.) are in constant and familiar use. There are, however, some authors who maintain that Brisson, not having been a Binomialist, ought not to be allowed to found genera in a Binomial System. Dr. Hartert is strongly of that opinion (see 'Ibis,' 1903, p. 418), and I, though I have usually followed the lead of my friend and master, Strickland, have always thought that it was a mistake to have made this special exception in favour of Brisson. I wish, therefore, to point out that we have, in Schaeffer's 'Museum Ornithologicum,' twenty-six of Brisson's familiar generic terms of 1760 confirmed in 1789. Thus it is only necessary for those who reject Brisson's claims to found genera to adopt as the authority for them "Schaeffer, 1789," instead of "Brisson, 1760." The generic term "*Carduelis*" for the Goldfinch comes under this category, and may be quoted by those who exclude Brisson's names as "Schaeffer, 1789." It would, therefore, as has been already pointed out (*cf.* 'Ibis,' 1904, p. 293), take precedence over "*Acanthis*, Bechstein, 1803." In the same way "*Pica*," "*Nucifraga*," and "*Garrulus*" should, in my opinion, be quoted as of "Schaeffer, 1789," and not as of "Vieillot, 1816," as is done in the 'Vögel der paläarktischen Fauna,' while "*Coccothraustes*" and "*Pyrrhula*" (of the same work) may be attributed to "Schaeffer, 1789," in place of "Pallas, 1811," and in a similar way "*Passer*" to Schaeffer instead of Koch. On the whole very little, if any, disturbance in our ordinary nomenclature would be caused by the adoption of Schaeffer's generic terms, and I do not see how we can logically justify our refusal to acknowledge their validity.

V.—*Field-notes on the Birds of Efulen in the West-African Colony of Kamerun.* By George L. Bates*.

1. Agapornis pullaria } (Ibis, 1904, p. 605).
2. Agapornis zenkeri }

As I have not distinguished these two species from one another, they must be spoken of together. They resemble minature Parrots in their tones and actions as well as in their appearance. They go about in small flocks, making little metallic squeaky cries, which yet have something in them recalling the screams of Parrots. They like open country, and especially the tall grass called "nkaé," from which they get their Bulu name of "Kôs-nkaé" ("kôs" meaning Parrot); hence they are more common inland, for grass is scarce within a hundred miles of the coast.

At the back of my house at Efulen was a sort of wild fig-tree, and when its fruit was ripe a flock of these little birds often visited it. Among them were apparently young birds, which would sit on a limb making a great racket and fluttering their wings till the others brought them food.

3. Ortholophus albocristatus (t. c. p. 609).

This is strictly a forest-bird. It makes a practice of flying near the ground under the trees where a company of monkeys is feeding, and picks up the fruit that they drop. I have seen an individual joining with smaller birds in pecking at a swarm of "driver" ants on the ground. It has a most disagreeable cry, resembling the squawking of a hen when caught. Usually I have observed it solitary, but one day, when I was going along a forest-path, I heard a variety of strange noises in the tree-tops, and soon discovered a party of half a dozen "Bōbone" (as the natives call them) chasing each other, apparently in play.

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* [These notes were prepared to accompany Dr. Bowdler Sharpe's paper on the birds of Efulen, which appeared in the last number of 'The Ibis' (1904, p. 591). Unfortunately they arrived too late for insertion, but are of so much interest that they deserve publication. Mr. Bates has now gone on a six months' holiday to Illinois, U.S.A., after which he proposes to return to West Africa and resume his work. A map of the northern part of the Balu district of Kamerun, in which Efulen is marked, will be found in the 'Mittheilungen von Forschungsreisenden und Gelehrten aus den Deutschen Schutzgebieten,' vol. xii. p. 38 (1899).—Edd.]

4. Bycanistes albotibialis Cab. et Reich. (Grant, Cat. B. xxii. p. 420).

This bird (the "Miam") is the most common of the larger Hornbills. Two or more are generally found together, in the tops of the tall forest-trees which bear the fruits that they eat. As the foliage generally hides them from view, they are less often seen than heard. They have a loud clamorous call, and besides make querulous cries while they feed; whenever they take flight the rushing sound of their wings is quite startling.

I have watched Hornbills feeding and pulling from the trees fruits that cling tightly. They seemed to turn the head in such a manner as to bring their great casque against the twig and get a purchase, and so to wrench the fruit off, as a man does in the case of an apple that sticks fast by turning his hand and bringing the knuckles against the twig.

5. Bycanistes sharpii (Ibis, 1904, p. 609).

The "Zanga-miam," as this species is called, is very like the larger "Miam" in habits, and often goes in company with it. It is less noisy and has a different manner of flight; for while the "Miam" flies steadily and heavily, the "Zanga" progresses in long undulations and is quite light and graceful for a Hornbill.

6. Scoptelus brunneiceps (t. c. p. 610).

The three specimens of this species obtained were shot on two occasions. At both times the birds were seen in small flocks of from three or four to half a dozen. They were silently hunting for insects among the trees of old cleared land, flitting from bough to bough and sometimes clinging head downwards like a Sun-bird. The stomachs of my specimens contained insects of various kinds and a spider, while one had also some seeds in it. After killing the last example I saw one of these birds sitting alone and uttering a call, consisting of a clear loud note repeated six or eight times or more, when a pause ensued. Sometimes there was a quaver or "cracked" tone in its voice. It kept this up till some little birds of another kind came to annoy it, when, after a few sallies at them, it flew away. When I had learned this bird's call I found that it was not rare, for I heard it again several times in different places.

7. Merops albicollis (Ibis, 1904, p. 611). "Nso'oloñ."

Though I have sometimes seen one or two of these birds together, perched conspicuously on a bare twig, yet I have more often noticed them in small flocks. Sometimes a party comes and occupies the topmost branches of a large tree, with much twittering. Sometimes they circle or skim high in the air like slow-moving Swifts. I have more than once seen flocks circling over the waters of a good-sized stream, into which they took occasional plunges and out of which they emerged quickly, shaking their feathers. There is an air of distinguished grace about this bird, not only in the fine curves of its body, but in all its movements. It is not so much beautiful as elegant.

8. Cypselus batesi (t. c. p. 612).

The unique specimen was caught alive by a boy in a large mud-nest plastered on the underside of an overhanging rock, in a small bit of forest near a stream between two plantations. The nest was evidently an abandoned Swallow's nest; there were remains of others beneath the same rock. But the Swift must have been sitting on its own eggs. There were two white eggs in the nest almost hatched.

9. Corythæola cristata (Shelley, Cat. B. xix. p. 449).

Though the "Kunduk" was not included in Dr. Sharpe's list, I venture to put it in here as a companion to the next, the "Mba."

This species roams about in small parties among the high trees of the forest, flying over the tops or running along the branches. When one is winged it will run along the ground like a Turkey, and often escapes through the underbrush.

The flight is easy and graceful and the birds sail far without flapping. The call is a loud and rapidly repeated note, which may be heard far through the forest. Another peculiar call, consisting of a loud clucking note repeated more slowly, is heard from a solitary bird, perhaps a sitting female when off the nest.

The "Kunduk" has a proud and graceful carriage, as it arches its long neck while cautiously peering amongst the leaves at the hunter. When not old and tough it is good eating.

10. Turacus meriani (Ibis, 1904, p. 613).

The "Mba" is one of our commonest birds. It makes a loud and harsh croaking call. It is found both in the forest and in the clearings, and especially frequents the aseñ trees of old gardens to eat their fruit, driving away the little birds and the Green Pigeons that always occur where ripe aseñ fruit is to be found. I have never seen the Mba fly far. It runs along the branches like a squirrel or a monkey, hopping from one to another, and only using its wings where the trees or branches are far apart. Then it flies with an easy gliding motion, as if the force to carry it forward came from the spring with which it left the branch, and not from its wings. The flesh of the Mba is good eating.

11. Heliobucco bonapartii (t. c. p. 617).

This bird, the smallest of the "Ôvôls," is very frequently seen. I have found several of its colonies in holes in dead trees near villages. They bore from a dozen to fifty holes in the trunk of a dead tree that is beginning to decay, and seem to reside there permanently. Near the village on the Ja River which I visited, stood the dead and half-rotten trunk of an immense cotton-tree. It was perforated for most of its length by the holes of these birds. When the base of the tree was struck with a stick a crowd of them flew out. Then when the trunk was hit harder, little bats (a species of *Nyctinomus*) flew out of the same holes. That the natives often find these bats and birds living together in the same holes is shewn by a curious notion which they have. When a boy brought me two white eggs taken from an Ovôl's hole, he said that the little bats of the kind mentioned were hatched from the eggs laid by the Ovôl.

These birds are often seen feeding on the small trees on old cleared land. They eat insects to some extent, but berries and fruits form their principal food. An "aseñ"-tree with ripe fruit is a constant resort, and they will chase away other birds from the spot where they wish to feed, even the Green Pigeons.

The Ovôl is the most quarrelsome of birds. The principal use it finds for its voice is to express anger. More than once individuals have been picked up by boys from the ground, alive but exhausted by fighting. Once two were so brought to me, still holding each other by the claws and uttering loud angry cries. They were females.

12. TRACHYLÆMUS PURPURATUS (Ibis, 1904, p. 618).

The "Ékuku," which is the largest of the Barbets, has habits very like the others. Its favourite haunt is the tangled growth of old cleared land, where it searches for the fruits on which it feeds. Being secretive it is seldom seen, but it is continually heard. Its usual call is a monotonous note repeated slowly, about half a dozen times, in a soft far-away tone. This is usually answered by the same call from another bird (its mate?) a little way off, and the second often begins before the first has finished, so that the two are heard at once. While making this call the bird bends its head forward at each note (though an observer seldom sees that, as the bird is usually hidden). It also sometimes makes a rough guttural croaking noise, or an alarm-note, imitated by the Bulu name "Ékuku."

13. VERREAUXIA AFRICANA (t. c. p. 620).

All of my specimens of this bird had in their stomachs small white grubs, such as bore in the stems of plants or under bark. Once I saw a little fellow of this species, not many yards away, pecking at a small green endogenous stem no larger than a pencil. After it flew away I went to look, and found a fresh hole pierced to the worm-eaten heart of the stem, but no worm.

14. Muscicapa lugens (Ibis, 1904, p. 623).

The habits of this bird, which is called "Kula" or "Ôkulebe," are exactly like those of the little *Alseonax epulata* with the same native name, except that its look-out station is always some projecting snag or log over a stream, while that of *Alseonax* is some bare twig in a glade in the depths of the forest. Both birds seem to avoid thick foliage, requiring a small open space for their fly-catching evolutions; but while the little *Alseonax* finds open spaces in the forest, the larger *Muscicapa* keeps to the more spacious and better-lighted openings over water.

15. Diaphorophyia castanea (t. c. p. 625).

These fluffy little birds belong to the dark forest, though they come also into the thickest part of the growth around the villages. Sometimes they make a great noise with their wings as they flit from branch to branch among the trees, and sometimes they make a sharp snapping noise like the cracking of a whip. I ascertained at last that the latter noise was made with the bill and not with the wings, as I saw a bird making it while sitting still on a twig. Occasionally, when near enough, I could hear a vocal sound accompanying the snap. The snapping sound is perhaps made by the male alone, as it is only the black-and-white bird that I have observed producing it.

16. Bias musicus (t. c. p. 626).

While it is true that the name of "*musicus*" does more than justice to this little fellow's vocal efforts, the "Kulityañ" appears to try to deserve the name, for he is continually uttering his "kuli-tyañ! tyañ!"; he begins slowly, then repeats the notes faster and faster till they become jumbled together. His brown mate, at least, regards it as a first-rate performance, for she may always be heard answering with her little harsh "churr!"

Both male and female have a peculiar way of flying, with much fluttering of wings and little progress—a sort of mincing flight. The male is especially fond of doing this, making the white on his wings flash or twinkle in the sunshine.

This bird lives around village clearings, not venturing into the dark forest.

17. Smithornis zenkeri (Ibis, 1904, p. 627).

The female specimen of this bird was caught in its nest at night in the forest, near the spot where I was camping at the time. The nest was a hanging pocket-shaped mass of moss, on a bush five feet from the ground. It contained one white egg—size 16 × 23 mm. The date was January 2nd.

The males of both species of *Smithornis* make short circuit-flights about the small openings of the undergrowth in the forest, uttering meanwhile a rattling noise, which may be best imitated by blowing between the protruded lips and making them vibrate, and at the same time using the voice.

18. Artomyias fuliginosa (t. c. p. 628).

The "Mula" (dark) is often seen sitting motionless on a dead twig or on the loop of a vine, where its watch for insects is not obstructed by foliage; thence it makes its sallies and returns to the same spot. In the stomachs of the examples that I have skinned were often found small, brightly-coloured beetles almost whole: two small metallic Buprestidæ so obtained were good enough for specimens.

The young bird (No. 402) was found on the ground under a tall tree after a storm. No. 365 met its death by becoming entangled in the strong web of a large yellow-and-black spider, where my boys, seeing it struggling, went and caught it.

19. Tchitrea viridis (t. c. p. 630).

This species of *Tchitrea*, called "Abelebe," is fond of the neighbourhood of villages, where the male may often be seen whisking his white tail-plumes in and out among the bushes. *T. tricolor* keeps more to the forest. I have seen several of the tiny cup-shaped nests of *T. viridis*, placed in the forks of bushes and small trees in the open ground about villages. Though I have not myself seen the male on the nest, the natives have told me (and I do not doubt their correctness) that he shares incubation with his mate.

I once saw a female busily bringing insects to a great complaining young Golden Cuckoo (probably *Chrysococcyx cupreus*).

The cry of the "Abelebe" is a low buzzing chirrup—so slight a sound as to be hardly noticeable, but so peculiar that when learned it cannot again be mistaken. The forest species has the same cry.

20. Elminia longicauda (Ibis, 1904, p. 631).

This pretty little Flycatcher, known as the "Öseminjombôk," is very common in old-clearing growth on the Ja, but less so about Efulen. It is most often seen in the evening, hopping about on bare twigs and continually spreading its fine tail, while always in motion. Even when singing it continually turns its body and spreads its tail. Its notes are very pleasing, as fine and sweet as those of a Sun-bird, but more varied and rich.

21. Criniger calurus (t. c. p. 632).

This species is seen in nearly every *éjak*, or company of little birds feeding together in the forest, and is rarely seen except with an *éjak*. Its white throat is very conspicuous, and it has a way of spreading the long white feathers of that part when excited, as some other birds have of raising their crests; so that it may almost be said to have a crest beneath instead of on the top of the head. It is an insect-eater.

22. Bleda simplex (t. c. p. 632).

The "Nkes's" notes have something of the peculiar quality of those of the "Ngomejal," but they are fewer and not so loud. It is a bird of the old cleared land about villages, and is found wherever the "Nkwe'ele" (*Pycnonotus gabonensis*) is to be seen, and is almost as abundant. But while the Nkwe'ele is bold, the Nkes is particularly shy, and, though heard continually and often seen for a moment, is hard to approach. It goes alone or in pairs, never in parties. Its principal food consists of insects.

23. Bleda leucopleura (Ibis, 1904, p. 635).

The "Ngomejal" goes in parties of from two or three to half a dozen, and keeps to the swampy places in the forest, probably because some favourite fruit is found on the trees or vines of the swamp; for, like the "Ntyetyal" and "Ôtok," it is a fruit-eater. The Ngomejal is noisy, uttering notes of a peculiar ringing and at the same time guttural tone, and running them rapidly together, so that they sound like excited talking. It is a restless bird, always on the move.

24. Bleda notata. "Ôlo-éjak" (op. cit. p. 635).

Both this bird and the "Nti-éjak" (*Bleda syndactyla*) are also called "Ntyoñ" and are very similar in their habits. The word "éjak" means a company of little birds of different kinds feeding together in the forest, and "ôlo-éjak" means "slave of the company," while "nti-éjak" means "freeman of the company." Though often seen in an éjak, they are frequently met with by themselves. They keep near the ground in the thickest of the undergrowth. Their food consists entirely of insects. They are always among the first birds caught in snares set on the ground and baited with white ants. They are strictly forest-dwellers.

25. Eurillas efulenensis (op. cit. p. 636).

The "Ôtok" is one of the commonest birds, both in the bush-growth of cleared land and in the forest. Its small size and dull plumage and its skill in hiding itself cause it to be seldom seen unless it be watched for, but it is noisy and may be heard continually. Some of its many notes have a clear ringing tone that is pleasing, but they soon become monotonous. It feeds mainly on small fruits.

I have not generally been able to distinguish between the different species of *Eurillas* when seen wild. While I am sure that the remarks given above apply to the species named, they probably apply to *E. camerunensis* and *E. virens* as well.

26. Ixonotus guttatus (op. cit. p. 638).

Birds of this species, which is called "Ntyetyal," feed on small fruits in the tops of tall trees in flocks of a dozen or so. They arrive together, spend a few moments or, if they find fruit, a longer time in one place, and then are off to another, flying in a body with a cheerful twittering noise. Once I saw a small flock feeding and resting in a low tree, where they could be observed at close quarters. While watching me they went through some antics that seemed comical and almost impudent, extending one wing and keeping the other closed, so that I could not help thinking of a boy standing on one leg and extending the other.

27. **Pycnonotus gabonensis** (Ibis, 1904, p. 638).

The "Nkwe'ele" is the commonest bird of the cleared land, or, at any rate, that most frequently seen and heard, for it is bold and continually utters its cheerful little call or song. It sings most heartily in rainy weather. It is a versatile bird, being able to circle round and snap up insects on the wing like a Flycatcher, as well as to cling by its claws to the bark of a perpendicular tree-trunk like a Woodpecker.

Nests of the Nkwe'ele are often found placed on plantains, bushes, or small trees. The fabric is shallow and cup-shaped, made of dry leaves as a base, with fine root-fibres or grass-stems for the interior, and is not lined.

VI.—*Remarks on* Motacilla subpersonata *Meade-Waldo*.

By Ernst Hartert, Ph.D.

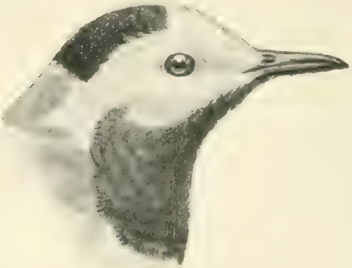
Nearly everywhere in the Palæarctic Region a form of black-and-white Wagtail is met with. It is therefore not very strange that one should be found breeding in Northern Africa. Until recently this had not been ascertained to be the case, as we only knew of *Motacilla alba alba* and *Motacilla alba lugubris* being winter-visitants there. But recently Mr. Meade-Waldo has discovered a very interesting and peculiar race of this group breeding in Western Morocco, on the Oum Rbiah or Waad Moorbey. It is true that years ago Dr. Sharpe bought from Mr. Boucard a specimen of a Wagtail said to have been received from Morocco, which is now in the British Museum. This example must, however, have been erroneously stated to come from Morocco, as it is a specimen of *Motacilla personata*, under which name it was entered in the 'Catalogue of Birds' (x. p. 481), although the correctness of the locality was doubted by Dr. Sharpe.

Mr. Meade-Waldo, when describing his new Wagtail, compared it with *M. personata* from Turkestan and called it *Motacilla subpersonata* (Bull. B. O. C. xii. p. 27, November 1901). In the 'Ibis,' 1903, p. 208, he again compared his new form with *M. personata*, figuring its head side by side with the head of *M. alba*, which, however, was called *M. personata* by mistake.

In my opinion, it would have been better to have compared *M. subpersonata* with *M. alba* than with *M. personata*. With the latter it only agrees in having more black on the head than *M. alba*, but the black is very differently distributed. From *M. personata* it differs, moreover, in the coloration of the wing-coverts, which are narrowly margined with greyish white, instead of being so widely bordered with white as to cover the dark bases, and also in the lesser size and lesser extent of the black on the nape. With *M. alba* the Moroccan Wagtail agrees in every way except in the coloration of the sides of the head. There is a narrow black line from the base of the bill to the eye and another, sometimes irregular and ill-defined, from the base of the bill under the ear-coverts to the sides of the neck. Besides, the black of the throat runs up in a wide band on the sides of the head, where it is connected by a black line with the black of the nape. It is thus certain that *M. subpersonata* is only the Moroccan representative of *M. alba*, to which it is more closely allied than to *M. personata*.

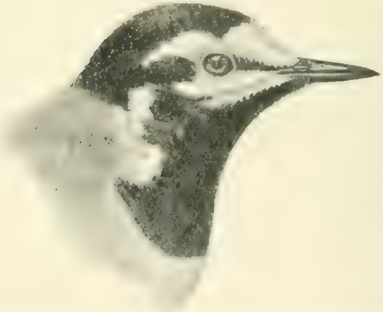
On the other hand, *M. subpersonata* might as well be compared with one as the other, for my studies have led me to the conclusion that all the black-and-white Wagtails are geographical representatives (subspecies) of one species, which, of course, must bear the oldest name *Motacilla alba*. Thus *M. subpersonata* will stand in my forthcoming number of 'Palæarctic Birds' as *M. alba subpersonata*, and *M. personata* as *M. alba personata*.

Text-fig. 9.



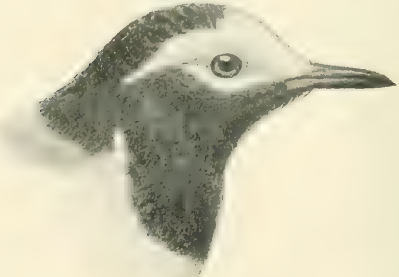
Head of *Motacilla alba alba.* ♂ ad. (spring).

Text-fig. 10.



Head of *M. alba subpersonata*, ♂ ad. (spring).

Text-fig. 11.



Head of *M. alba personata*, ♂ ad. (spring).

Mr. F. W. Riggenbach has lately sent to the Tring Museum six adult males, one adult female, and two young birds in first plumage of this Wagtail, all from the banks of the Oum Rbiah or Waad Moorbey, from the Mhoiwla, a day's march from Mazagan, to Rahamma. The female differs from the male in being smaller (wing 5 mm. shorter), and in having the crown of the head dark grey with black spots and a black patch in front, just above the white forehead, while the upper throat is mixed with white. The young are like those of *M. alba alba*, but have darker ear-coverts.

The accompanying text-figures represent the heads of a fully adult male of *M. alba subpersonata*, from one of Mr. Riggenbach's specimens (text-fig. 10), and corresponding heads of *M. alba alba* (text-fig. 9) and *M. alba personata* (text-fig. 11).

VII.—*Notes on the East-African Species of* Macronyx *and* Tmetothylacus. By F. J. Jackson, C.B., C.M.G.

(Plate III.)

I trust that the accompanying notes on the three species of *Macronyx*, one of which is new to science, and also on their near ally, the remarkable *Tmetothylacus tenellus* of Cabanis, found in British East Africa, may prove of interest to readers of the 'Ibis.'

Of the species of *Macronyx*, the largest and at the same time the commonest is *M. croceus*. This fine and conspicuous bird occurs along the coast from Witu to Mombasa and throughout the two Protectorates westward to Uganda. It is particularly plentiful in the Nandi country, at an altitude of 6500 feet, and again at the Eldoma Ravine and on the eastern foot-hills of Mau. It frequents open grass-country interspersed with short scrub and acacia-trees, and is almost invariably found in pairs all the year round. It is very tame and confiding, and is easily approached. It has a short pleasing song, which it warbles forth on the wing, or while at rest perched on a tree, bush, or ant-hill. Its flight is short and jerky, and when flushed from the ground the bird gets up in a leisurely manner and often remains flitting up and down over the spot with a quivering jerky motion of the wings, at the same time calling in a plaintive voice to its mate hidden in the grass. When disturbed, it almost invariably flies up to a bush or tree, from which it can obtain a good view of the intruder. Its nest is placed under the shelter of a tuft of grass, but in Nandi, where I found many of the birds breeding between April and June in 1898, it was always situated at the foot of a common plant, with large velvety leaves and pretty pink flowers, that abounds on the grassy slopes of the hill-sides. The nest is constructed of dry grass-stems and roots, and is lined with fine grass-rootlets. The eggs are generally three in number. Two specimens in my collection, from near Entebbe in Uganda (May 18th, 1895) are of a pale brownish white, densely freckled, especially towards the larger end, with dullish light red. A third egg from the same clutch is more thinly marked, and has the ground-colour of a clearer white. The measurements of these eggs are 0·8 by 0·65 inch.

Macronyx sharpei (Plate III.), which I had great pleasure in naming after my old friend Dr. Bowdler Sharpe (see Bull. B. O. C. xiv. p. 74), appears to be confined to the higher portions of the great Mau plateau, between 7000 and 8500 feet in elevation. It is readily distinguished from *M. croceus* by the smaller size, the greenish-yellow under surface, and the band of black spots across the lower throat and chest, in place of the distinct black gorget of the latter bird. It also differs considerably in its habits, being entirely confined to the open rolling grass-country devoid of bush and trees, and being found for the most part singly, or only occasionally in pairs. When flushed, it flies straight away for a considerable distance, and always settles again on the ground. I first came across this bird on a cold blustering day in February 1898, on the Mau downs at an altitude of 8700 feet, where I obtained two specimens out of several seen. I then thought that the birds were on migration, as I had so many times passed the same way without noticing any of them, but I have since found that they are resident. In May 1901 I met with a considerable number of them, for the most part singly, near the railway-station of Londiani at the head of the Nyando Valley (alt. 7500 feet). On the 22nd of the same month I found a nest, from which the old bird rose, placed under a tuft of grass on the side of a low ant-hill, and containing two slightly incubated eggs. The foundation of the nest was composed of grass stems and roots, while it was neatly lined with small fine rootlets.

The eggs are of a very pale greenish white, obscurely mottled with pale yellowish-brown and grey under-markings, most numerous at the larger end. They measure 0·85 by 0·65 inch.

Macronyx wintoni, so far as I have been able to ascertain, is found in three places only—the Rift Valley in the vicinity of Lake Naivasha, the eastern side of the Guashangishu plateau, and the Nyando Valley in the vicinity of Kitotos. I first met with it in the Nyando Valley in Oct. 1889, and obtained two specimens. It was thought to be a new species, and was named by Dr. Bowdler Sharpe ('Ibis,' 1891, p. 444) *M. wintoni*, after the late Sir Francis de Winton, who was at that time Administrator of the Imperial British East Africa Company's territories; but Captain Shelley (B. of Afr. iii. p. 13) considers it to be inseparable from the South-African *M. ameliæ*. Even if this be correct, it was certainly an interesting discovery, as the bird has not, I believe, been recorded from either British Central Africa or German East Africa. This remark applies equally to *Chera progne* * and *Pyromelana taha*, both of which are found in the Rift Valley. *M. wintoni* is fairly plentiful in the Nyando Valley on the open plains near Kitotos, but may be considered a rare bird in the Rift Valley and on the Guashangishu plateau. It is essentially a bird of the open grassy plains, and is rather wild and difficult to approach; when flushed it will often fly so far that it is exceedingly difficult to mark it down. Its habit, too, of running adds to the difficulty. That it is a resident species, there can, I think, be little doubt, as I have obtained specimens in May, June, August, September, and October, and have seen it near Lake Naivasha in February.

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* Captain Shelley has separated the northern form of this bird as *Chera delamerei* on account of its slightly longer tail (Bull. B. O. C. xiii. p. 73), but refuses specific rank to *Macronyx wintoni*, which has, in my opinion, quite as good claims to that distinction as *Chera delamerei*.

The very remarkable Pipit *Tmetothylacus tenellus* Cab., which has recently led Dr. Madarász to believe that a bird had been brought to light that would "entirely modify the hitherto established principal characteristics of the Order Passeriformes" *, is fairly well distributed throughout British East Africa, though it is a distinctly local species. It is found in the coast-regions both on the mainland of Witu and on Patta Island north of Lamu, and again in Juba-land. I have also seen it in the Baringo district, in the Nyando Valley, and near Taveta. Four specimens were obtained by Mr. A. B. Percival on the upper waters of the river Tsavo, north-east of Kilimanjaro, in 1902. It was at Lake Jipi, some ten to twelve miles south of Taveta, that Mr. Coloman Katona obtained the specimen described by Dr. Madarász, but unless he actually saw the bird wading in the shallow water at the edge of the lake, I very much doubt its being aquatic in its habits. My own experience points to the reverse, as I have invariably found it in open bush-country where the soil is dry and sandy, and at a considerable distance from water. It is generally met with in small family-parties of three or four together, and when flushed almost invariably perches on a bush or small acacia-tree. It is rather wild and by no means easy to approach.

Tmetothylacus with its naked legs is, no doubt, a very abnormal form, but the plumage of the young bird, which is quite Anthine in character, at once shews that its nearest ally is *Anthus*.

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* *Cf.* Ibis, 1904, p. 653.

VIII.—*The Knot reported as Breeding in Iceland.*

By Otto Ottosson, M.D.

On the 17th of June, 1898, a nest of the Knot (*Tringa canutus*) was found in the island of Hrisey in the north of Iceland. It contained four fresh eggs of characteristic appearance. As I know no other discovery of a nest of this bird with eggs, and their identity is beyond all doubt, though the bird was watched and not shot, I presume that the facts relating to it may be of great interest. Concerning the nest and its position, I can only say that the bird was breeding together with several pairs of *T. maritima*. So soon as I received the clutch I wrote for full details about it, with an account of the discovery; but, unfortunately, the collector (E. Möller, of Akureyri in Iceland) was then dead. However, some particulars accompanied the sending of the eggs.

The collector, who had a very good knowledge of the Icelandic bird-fauna—of which I, during a ten years' connexion with him, had many opportunities of satisfying myself,—knew this bird very well, and had often seen it in spring, but never before met with it breeding, though in the course of thirty years' collecting of eggs he always had his attention especially directed to it. Of the nest nothing is stated, and of the bird only that it was not shy but kept near the nest, and could therefore be observed with great accuracy. Möller would not shoot it, hoping to get another clutch of eggs from the same pair, and he regarded it as enough that he had seen it at the distance of a few mètres. The colour of the eggs is as follows:—

Ground greenish grey. The markings consist of close, very oblique spots, forming a zone or wreath at the thick end, partly of dark red-brown on the surface, partly of deep grey-violet and grey-blue underlying spots; there are besides at the thicker end a few dark black-brown spots and streaks very much on the surface. The eggs are quite like very large eggs of *T. alpina* of the closely-spotted type, and cannot be confounded with any others of the same size.

Dimensions: 41 × 29; 41 × 29·1; 41·4 × 28·5; 41·4 × 29 mm.

Weights: 89; 92·5; 93; 97 centigrams.

Lenhofda, Sweden,
December 1st, 1904.

IX.—*An Ornithological Excursion to the Victoria Falls of the Zambesi.* By W. L. Sclater, Director of the South-African Museum.

The recent opening of the railway between Bulawayo and the Victoria Falls on the Upper Zambesi has rendered a visit to what is, without doubt, the most remarkable natural phenomenon in Africa, if not in the whole world, an easy matter, and one which can be undertaken in comparative comfort and at a fairly reasonable cost.

Having just completed the manuscript of the fourth and last volume of the 'Birds of South Africa,' I felt that I was entitled to take a short holiday, and decided to visit the Falls, and at the same time to make some additions to the collections of the South-African Museum from that district.

As is well known, the first European who saw the great Falls of the Zambesi was David Livingstone. On his fourth journey from the south in 1852 he first met the upper waters of the Zambesi at Sesheke, some sixty miles above them. Thence he went right through to the Atlantic coast of Angola at St. Paul de Loanda. Returning from Loanda in 1855 he left Sesheke on the 3rd of November to descend the Zambesi to its mouth. He stopped at the Island of Kalai, about thirty miles down the river, and from this point made an excursion still further down in a small canoe. He landed on an island at the lip of the fall itself, where he made a little garden and carved his initials on the trunk of a tree. On this island, now called "Livingstone Island," can still be seen the identical tree, and indistinct traces of the "L" which he carved on it in November, 1855 *.

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* See his 'Missionary Travels,' p. 525.

Although since this discovery a number of travellers have visited the Falls, such as Chapman, Baines, Baldwin, Selous, Holub, Oates, and Mohr, very few have done any zoological collecting in the neighbourhood. Indeed, with the exception of Dr. Bradshaw, who resided in the neighbourhood for several years, no one seems to have collected systematically on the Upper Zambesi at all*. The collections of Sir John Kirk, who accompanied Livingstone on his second journey in 1862-3, and of Captain Alexander, who ascended the river from its mouth as far as its confluence with the Kafue, were made chiefly along the lower reaches. Unfortunately Dr. Bradshaw's collection was dispersed at the time of his death, and no complete account of it has ever been published. My own excursion was far too short to obtain anything but a general view of the bird-life of the Upper Zambesi, but I think that a few notes of what I saw and a list of the birds that I brought back may be of interest to my fellow-members of the B. O. U.

Accompanied by my wife and the taxidermist of the S. A. Museum, I left Cape Town on Wednesday morning the 31st of August, and reached Bulawayo in the early morning of the 3rd of September. Leaving again in the evening, we arrived in time for dinner at the Victoria Falls Hotel on the 4th of September, the whole journey occupying five and a half days. Little bird-life was seen on the way up; but a pair of Lanners (*Falco biarmicus*) was observed perched on the telegraph-wire near Touws River on the first day. Near Gaberones, in the Bechuanaland Protectorate, where the country becomes more interesting and picturesque, with kopjes and forest of a thin and shadeless character, several birds could be distinguished from the carriage-windows. Perched on the branches of the thorns (*Acacia*), which were just beginning to get green, were seen examples of two species of Rollers (*Coracias caudatus* and *C. mossambicus*), while small parties of Yellow-billed Hornbills (*Lophoceros*

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* "Victoria Falls" is one of the localities mentioned in Dr. Sharpe's Appendix to Oates's 'Matabeleland,' but very few specimens seem to have been obtained there.

epirhinus) flew from tree to tree with their characteristic undulating flight, the long tail waving behind. One of the commonest of the birds in this district is the "Go-away-bird" (*Schizorhis concolor*), with its plain grey dress and fine crest, which it keeps elevating and depressing as it rests on a branch. Its loud cry, always exactly resembling its name, is uttered in a most curious querulous tone. We did not, of course, hear it on this occasion, but we had ample opportunity of making its acquaintance later. Other birds easily recognised were the Long-tailed Shrike (*Urolestes melanoleucus*), the White-crowned Shrike (*Eurocephalus anguitimens*), and the large Drongo (*Dicrurus ater*), easily distinguished by its forked tail. At Mahalapye, in the Protectorate, I was fortunate enough to light upon a fine example of a "Gom Paauw" (*Otis kori*), just brought into the station by a native, and to secure its skin for the Museum. Although by no means a rare bird in some parts of the country, it is never easy to obtain specimens, as it is excellent eating and is always destined for the cooking-pot.

At Bulawayo, where we spent the day, the only birds about the town were a number of Pied Crows (*Corvus scapulatus*), which probably act as scavengers. I have never seen Crows about any other South-African town, nor anywhere in such numbers.

Between Bulawayo and the Falls the country is decidedly hilly, and the work on the line here was very heavy, the whole district being covered with a thin forest, chiefly of Mopami and Teak; it is also excessively dry and waterless. In addition to the birds already observed, I recognised here only a small Dove, with its wings rich rufous underneath (*Haplopelia larvata*) and a Bateleur Eagle (*Helotarsus ecaudatus*) soaring high up in the sky, with its excessively short tail and its head bent down towards the ground, searching for a meal.

On arriving at the Falls we stayed for three days at the temporary hotel at the present terminus of the railway, about half a mile from the Falls themselves, spending our time chiefly in viewing them from different points and in taking photographs.

Birds were not so numerous as I expected them to be, either on the river itself or in the bush and scrub along the banks.

The first morning I saw a pair of the "Berg Gans" (*Chenalopex ægyptiacus*) standing on a rock just above the Falls themselves, while River-Duikers (*Phalacrocorax africanus*) and Snake-birds (*Plotus levaillanti*) could be observed at all times and in all sorts of places along the river, both of them generally sitting motionless and upright on a projecting rock, and only moving off in a leisurely manner when approached quite closely.

Kingfishers, as might be expected, are very numerous on the Zambesi, both as regards individuals and species; the smaller Black-and-White Kingfisher (*Ceryle rudis*) is perhaps the most common, but the larger (*C. maxima*) is by no means rare, and it is a beautiful sight to see it poised in the air, with its head and beak pointed directly downwards and its wings vibrating rapidly, before making a dash on the unsuspecting fish below.

Flying around the actual Falls, in and out of the clouds of rising spray, was a pair of Hawks, which, however, I was never able to identify satisfactorily, also a number of small Swallows with white under-parts; these, I believe, were *Hirundo dimidiata*, the Pearl-breasted Swallow, but I was unable to secure an example, and consequently could not be quite certain. Playing about the rocks at the Falls, too, were several pairs of the handsome black-and-white Wagtail (*Motacilla vidua*) which were running up and down and taking short flights in search of insects and grubs.

In the so-called "Rain-Forest," and in the bush around the Falls and along the banks of the river above, were a good many small birds. The Three-streaked Bush-Shrike (*Telephonus australis*), noticeable for its clear melodious whistle, sat very tamely on the branches of the bare trees. Emerald-spotted Doves (*Chalcopelia afra*) and Cape Turtle-Doves (*Turtur capicola*) were very plentiful, the cry of the former being one of the most characteristic sounds on the Zambesi—"hoo hoo hoo-hoo" in a gradually descending scale. Round the blossoms of some of the larger trees (especially one known as the Mzingula, the botanical name of which I have been unable to obtain) hovered numbers of Scarlet-chested Sun-birds (*Cinnyris gutturalis*), while flocks of small birds of the genera *Quelea* and *Lagonosticta* flew from bush to bush.

On the 8th of September we moved up about seven miles above the Falls to a place called Livingstone, on the north bank of the Zambesi, where the river is broad and open and not obstructed by islands, at least for a mile or two. Here there seemed to be a good many more birds, and we added considerably to our list and collection. One of the commonest species was the Stripe-chested Weaver-bird (*Plocei-passer pectoralis*), which was to be seen everywhere, and was very noisy and quarrelsome. These birds were usually in small parties about the mimosa-thorns, and were a good deal on the ground; they appeared to be thinking of breeding, and everywhere their untidy nests—woven of dry grass-stems, with the ends sticking out in all directions—were to be seen, a good many generally occupying each thorn-tree.

A dead mule lying a short distance from the settlement had attracted a number of Vultures; these, after gorging themselves, settled in the neighbouring trees to rest and digest. We were fortunate enough to secure two of them for the Museum, and they proved to be very interesting, being respectively Rüppell's Vulture (*Gyps rueppelli*) and the Hooded Vulture (*Necrosyrtes pileatus*), species hitherto unrepresented in our collections at Cape Town.

When on the river one day, unfortunately without my gun, I was much surprised to see a Gull seated on a rock: I identified it with tolerable certainty as *Larus cirrhocephalus*; unfortunately, neither Drury nor I saw it again.

We stopped two days at Livingstone, and then proceeded to a camp which had been made for us about seven miles further up the river, where the Sinde, a small tributary from the north, joins the main stream. Here the river is much broken up by islands, and there seemed to be good collecting-ground, so we began our work in earnest.

By far the commonest bush-bird at this spot was the Black-capped Bulbul (*Pycnonotus layardi*), with its cheerful piping note and active habits, a number being usually found together haunting the higher branches of the trees in the neighbourhood of the river. Jardine's Babbler (*Crateropus jardinii*) was also a noticeable bird, noisy and restless, with a harsh chattering note, reminding one of the well-known Indian "Sat-bhai" (*Crateropus canorus*); while the Black Tit (*Parus xanthostomus*) was commonly seen climbing about the topmost branches of the taller trees, and getting into all sorts of queer attitudes, like the English Tits and the Cape Mouse-birds.

Among the Birds-of-Prey the Kite (*Milvus migrans*) was very frequently seen rolling round in the air, easily recognised by its long forked tail, while the Bateleur (*Helotarsus ecaudatus*) could also be clearly identified by its short tail. Occasionally, too, I saw the magnificent Fish-Eagle (*Haliaëtus vocifer*), while one example of that somewhat rare bird, Wahlberg's Eagle (*Aquila wahlbergi*), was obtained. One morning, on a neighbouring island, Drury was fortunate enough to meet with a family of the large Eagle-Owl (*Bubo lacteus*), consisting of a pair and one young bird fully fledged; the female—which was carrying in her claws the greater part of the carcase of a Zambesi Genet (*Genetta rubiginosa*)—and the young bird were secured and skinned.

Game-birds were not very numerous: a few Guinea-fowls were seen, but were very wary and difficult to approach; the prevailing Partridge was *Pternistes swainsoni*, while the only Knorhaan seen and secured was a female *Otis melanogaster*.

I saw one example of that rare bird Seebohm's Courser (*Rhinoptilus seebohmi*) on the way up from Livingstone to the Sinde, but unfortunately my gun had been left behind with a boy at the time.

Apart from the Duikers and Snake-birds, the "Hadadah" (*Hagedashia hagedash*) was one of the commonest birds about the Zambesi; it was often to be seen standing about on the islands in mid-stream, and when disturbed made off with a loud cry somewhat resembling "a-a-ah."

Hammerkops (*Scopus umbretta*) were also very common, and at a distance were not easily distinguished from the Hadadahs.

After staying eight days in our camp we returned to Livingstone, where I left Drury for a few days more, and proceeded to Bulawayo.

A day was spent in making an excursion to the Khami ruins, about fourteen miles from Bulawayo; these are probably of similar origin to those of Zimbabwe, which we subsequently visited, but are not in so good a state of preservation. Except for a flock of Guinea-fowls and a pair of Coqui Francolins noticed on our way back, very few birds were observed. Another two days were devoted to the World's View, where Mr. Rhodes's grave is situated, on the top of a smooth granite kopje in the Matoppo Hills; but here, too, I was somewhat disappointed in the number of birds. The large White-necked Raven (*Corvultur albicollis*) was very numerous, however, about the hotel; it was exceedingly tame and familiar, and appeared to be living on scraps picked up near the kitchen door. In no other part of Africa have I seen this species so abundant and so tame.

Running about among the rocks I also observed the White-shouldered Bush-Chat (*Thamnolæa cinnamomeiventris*), a species that I had never before met with, while Drongos and Kites were just as numerous as about the Falls.

Mr. Marshall Hole, whose house in the suburbs of Bulawayo I visited, has a large aviary containing a number of seed-eating birds; among these I was very much astonished to see a pair of Cut-throat Weaver-birds (*Amadina fasciata*), which I understood from him had been caught locally. This species, so far as I am aware, has never before been found south of the Zambesi, and is, therefore, new to our fauna. According to Reichenow (Vögel Afrikas, iii. p. 147), it has not been recorded in the east south of Dar-es-Salaam in German East Africa.

Leaving Bulawayo on the 28th of September, we proceeded by rail and road to Zimbabwe, in order to see the ruins of the great temple and hill-fort, the true history of which is still shrouded in mystery. We travelled hurriedly, and had no opportunity of collecting and little of observing birds. Except for a flock of Brom-Vogels (*Bucorax caffer*), marching in a stately manner across an open flat, and a pair of Black Ducks (*Anas sparsa*), flushed when crossing the Tokwe River, there was little of interest from an ornithological point of view. From Zimbabwe we travelled back to Cape Town, making short stoppages at Serowe (the capital of the Bechuana chief Khama) and at Kimberley.

The following is a list of the birds observed at the Victoria Falls or in the immediate neighbourhood. Examples of all of them, except those marked with an asterisk, were secured for the South-African Museum :—

Hyphantornis auricapillus.
—— jamesoni.
Ploceipasser pectoralis.
Lagonosticta brunneiceps.
Hyphargus harterti.
Estrilda angolensis.
Amadina fasciata.
Quelea quelea.
Vidua principalis.
Passer diffusus.
Serinus icterus.
Emberiza flaviventris.
Fringillaria tahapisi.
Anthus pyrrhonotus.
—— rufulus.
Motacilla vidua.
Cinnyris mariquensis.
—— gutturalis.
Zosterops anderssoni.
Parus xanthostomus.
Nilaus brubru.
Telephonus senegalus.
—— australis.
Dryoscopus cubla.
—— guttatus.
Laniarius sulphureipectus.
Sigmodus tricolor.
Prionops talacoma.
Crateropus jardinii.
Pycnonotus layardi.
Chlorocichla occidentalis.
Cisticola erythrops.
—— chiniana.
Saxicola falkensteini.
Erythropygia zambesiana.
Muscicapa cærulescens.
Pachyprora molitor.
Terpsiphone perspicillata.
Dicrurus afer.
Rhinopomastus cyanomelas.
Coracias caudatus.
—— mossambicus.
Melittophagus meridionalis.
—— bullockoides.
Merops nubicoides.
Ceryle rudis.
*—— maxima.
Corythornis cyanostigma.
Halcyon orientalis.
Colius erythromelon.
Lophoceros melanoleucus.
—— erythrorhynchus.
Campothera bennetti.
Lybius torquatus.
Trachyphonus cafer.
Centropus senegalensis.
—— superciliosus.
Schizorhis concolor.

Pœocephalus meyeri.
Agapornis lilianæ.
Scops capensis.
Bubo lacteus.
*Milvus ægyptius.
Aquila wahlbergi.
*Helotarsus ecaudatus.
Asturinula monogrammica.
*Haliaëtus vocifer.
Gyps rueppelli.
Necrosyrtes pileatus.
Vinago wakefieldi.
Turtur semitorquatus.
—— capicola.
Œna capensis.
Chalcopelia afra.
Pternistes swainsoni.
*Numida coronata.
Limnocorax niger.
*Podica petersi.
Otis melanogaster.
*Larus cirrhocephalus.
*Lobivanellus lateralis.
Hoplopterus armatus.
Totanus hypoleucus.
—— glareola.
*Anastomus lamelligerus.
Scopus umbretta.
*Herodias alba.
*Hagedashia hagedash.
Butorides atricapilla.
Phalacrocorax africanus.
*Plotus levaillanti.
*Chenalopex ægyptiacus.

X.—*Notices of recent Ornithological Publications.*

1. '*Annals of Scottish Natural History.*'

[The Annals of Scottish Natural History. Nos. 51 & 52, July and October 1904.]

Mr. T. G. Laidlaw's report on the movements and occurrences of birds in Scotland during 1903 is commenced in the first and ended in the second of these numbers. It is to be regretted that a falling off should again be noticeable in the returns from the lighthouses on the east coast between the Bell Rock and the Orkneys; but, on the other hand, those from inland stations are in excess of any previous record. Mr. N. B. Kinnear has some notes on the avifauna of the Loch Arkaig district. In Dr. T. Edmonston Saxby's remarks on the occurrences of birds in Shetland we note the first record of the Hawfinch from that group of islands; and a footnote (which should refer the reader to p. 187 and not to p. 179) indicates that an example of this range-extending species struck the lantern at the Skerryvore lighthouse, which lies to the south-west of Tiree, in the Hebrides. An editorial complaint is made respecting the wholesale taking of the eggs of the Great Skua, no fewer than sixty having been received by a person in Orkney "from one of the Shetland stations" [presumably Foula].

Among the shorter notices we find the first account of the occurrence of the Great Spotted Woodpecker in the Outer Hebrides. Mr. Harvie-Brown contributes some interesting items upon the southward march of the Eider Ducks along the west coast of Sutherland, as well as some valuable details of the phenomenal number of Woodcocks and Snipes which nested in Central Scotland during the remarkably cold spring of 1902. We gather from the writer's remarks that many layings were unproductive, and that there was a large percentage of deaths among the young birds; also that similar unfortunate results marked the cold summer of 1904. Further notes on the subject are to be found at p. 245 in the October number. In this Mr. W. Eagle Clarke records the occurrence of a Short-toed Lark on September 20th at the Flannan Islands, during his recent visit there with Mr. T. G. Laidlaw—this being the very first record for Scotland of this inhabitant of Central and Southern Europe. A large number of Lapland Buntings were also noticed from September 6th to 21st at this new observation-station, and we may expect details of other interesting species. At p. 223 we are told how the Rev. Albert Ernest Sorby, of Darfield Rectory, Yorkshire, was charged and fined (*in contumaciam*) at Lerwick for having taken eggs of the Great Skua and the Sea-Eagle in Shetland, and we are happy to add that the spoils were forfeited. On turning to p. 245, it appears that the Eagle which laid the confiscated egg was an "albino" or probably a whitish individual—at any rate, the successor to a female which was shot and stuffed in 1903. At the time of writing, says Mr. J. S. Tulloch, "every inducement is offered in the way of money for the 'albino' dead." Lastly, we must notice Mr. W. P. Pycraft's interesting discovery in the University Museum, Aberdeen, of an overlooked and wrongly identified example of the American Killdeer Plover, labelled as having been shot at Peterhead in 1867 by Mr. Andrew Murray, who presented many shore-birds to the Museum. This bird is not, however, entitled to the honour that Mr. Pycraft claims for it as being the *first* "British" specimen, for the Hampshire bird was obtained in 1859, and although its pedigree was not considered quite good enough in 1884 to justify the insertion of the species in the 4th Edition of "Yarrell," yet subsequent inquiries have maintained its character.—H. S.

2. '*The Auk.*'

[The Auk. A Quarterly Journal of Ornithology. Vol. xxi. Nos. 3 & 4, July and October 1904.]

The July number of 'The Auk' opens with a paper by our Foreign Member, Dr. H. von Ihering, of Saõ Paulo, Brazil, on the Biology of the Tyrannidæ with respect to their Systematic Arrangement; and this is followed by Mr. P. A. Taverner's Discussion of the Origin of Migration, in which much that is trite as well as true is enunciated. Very interesting, but all too short, are the Extracts from an unpublished Journal of Audubon, contributed by Mr. Ruthven Deane. Passing over two papers of local interest, we come to Dr. J. A. Allen's discussion of the case of *Megalestris* versus *Catharacta*. It would appear that in the game of Nomenclature, which is at present so popular, it has been claimed by Herr Franz Poche (Ornithol. Monatsb. 1904, p. 23) that the name *Catharacta* of Brünnich, 1764 (amended as *Catarracta*), should take priority of *Megalestris*, Bonaparte, 1856, for the group of Great Skuas. This claim is now dissected and its futility exposed in masterly style. Mrs. Florence Merriam Bailey contributes some valuable notes on the Birds of the Upper Pecos, in New Mexico, where Messrs. Henshaw and Nelson left some work "for future investigators" in 1883, and the area is, we are now told, by no means exhausted. Then follows an elaborate paper, illustrated by maps, on the Origin and Distribution of the Chestnut-backed Chickadee (*Parus rufescens*) by Mr. Joseph Grinnell. A full-page illustration of a specimen of *Œstrelata hæsitata*, obtained in New Hampshire on August 30th, 1903, accompanies a notice by Dr. Allen of the eleven examples procured in the United States—four of them since 1895. This rare Petrel is therefore not yet extinct. Extirpated, as Mr. Nicoll tells us, in Dominica and Guadeloupe by an introduced opossum, there seems to be just a chance that it may still have a breeding-place in the unexplored mountains of Haiti ('Ibis,' 1904, pp. 563 & 574). The occurrence of the European Wigeon at Los Angeles, California (about 33° N. lat.), seems to be the furthest to the south yet recorded for it on the American side of the Pacific.

In the October number, Mr. Milton S. Ray's account of a fortnight on the Farallones (about thirty miles west of San Francisco) will appeal to all lovers of cliffs, caverns, and sea-birds. The most curious inhabitant is, however, the Rock-Wren (*Salpinctes obsoletus*); and in one of its nests were found embedded no fewer than 1665 objects—amongst them 769 bones (rabbit, fish, and bird), 492 small granite stones, 333 bits of flat rusty iron and nails, besides wire, pieces of scissors, &c. Six illustrations from photographs accompany this paper. Mrs. F. M. Bailey sends some additions to Mr. W. I. Mitchell's contribution of 1898, on the birds of San Miguel County, New Mexico, and papers of local interest follow, on birds of various portions of the States of Florida, Louisiana, and Mississippi. Particulars are given of the aim and scope of the newly founded "Worthington Society for the Investigation of Bird-Life," to be erected at Shawnee, Monroe County, Pennsylvania; and we are glad to see that the services of Mr. W. E. D. Scott, who is personally known to many of us, have been engaged for the Direction of this work.—H. S.

3. '*Avicultural Magazine.*'

[Avicultural Magazine. The Journal of the Avicultural Society. New Series. Vol. ii. Nos. 8–12 (June to October, 1904).]

These five numbers of the 'Avicultural Magazine,' the last of which includes the Report of the Council, Index for the year, and so forth, are chiefly noticeable for a series of excellent papers by Mr. D. Seth-Smith on the breeding in captivity of the Tataupa Tinamou (*Crypturus tataupa*), col. pl.; of the Painted Quails (*Excalfactoria*), pl.; of the Brush Bronze-wing Pigeon (*Phaps elegans*); and of the Scaly Dove (*Scardafella squamosa*). With regard to the Tinamou, young were in the end successfully reared, while it appears that the species is polygamous, and the male certainly incubates and covers up the eggs on leaving them. The same gentleman also writes on *Psitteuteles weberi.*

In addition, Mr. A. E. L. Bertling gives an interesting account of the hatching and rearing of the young of the Brush-Turkey (*Talegalla lathami*) at the Zoological Society's Gardens. Mr. J. L. Bonhote writes on the Bahama Amazon (*Chrysotis bahamensis*), col. pl.; Dr. Günther on the nesting in captivity of the Red-backed Shrike, Mr. St. Quintin on that of the Raven, Mr. Porter on that of the Red-faced Love-bird (*Agapornis pullaria*), and Miss Alderson on that of the Rufous Dove (*Leptoptila reichenbachi*). Dr. A. G. Butler has an article on *Saltator aurantiirostris* (col. pl.) with another on melanism and albinism, and Mr. Meade-Waldo an essay on nesting-boxes. Among the smaller contributions the breeding of a pair of pinioned Whoopers is recorded, but the locality is not stated.

4. *Bryan on Marcus Island.*

A Monograph of Marcus Island. An Account of its Physical Features and Geology, with Descriptions of the Fauna and Flora. By William Alanson Bryan, B.Sc. Honolulu: Bishop Museum Press, 1903.]

Marcus Island is a little speck of land in the North Pacific, in lat. 24° 14′ N. and long. 154° E., some 1400 miles from Honolulu. It was formerly claimed by the Japanese, but is now acknowledged to belong to the U.S. Mr. Bryan visited it, in the interest of the "Bishop Museum" of Honolulu, in a ship belonging to a Guano Company, but did not make a long stay. There were no land-birds on the island, but 56 specimens of marine birds and waders were obtained, which are referred to 18 species. Most of these are well known, but a new Noddy is described as *Micranous marcusi.* Good field-notes are given on all the species.

5. *Campbell on the Birds of the Bell Rock.*

[Notes on the Natural History of the Bell Rock. By J. M. Campbell. With an Introduction by James Murdoch, late Secretary to the Board of Northern Lighthouses. Edinburgh: David Douglas, 1904. Pp. xv & 112. Price 3*s.* 6*d.*]

This little volume, by an Assistant Light-keeper of the

Bell Rock Lighthouse, consists of notes originally published in the local press under the heads of the various months from April 1901 to April 1904. They will interest students of marine zoology, as well as ornithologists, as they give an excellent idea of what may be observed at different times of year at similar spots on the east coast of Scotland. As a record of migration they fail in that the direction of the birds' flight is not given, and the state of the weather is not invariably noted. The book is well written, but no very striking occurrences are reported.

6. *Dubois' 'Synopsis Avium.'*

[Synopsis Avium. Nouveau Manuel d'Ornithologie. Par Alphonse Dubois. One vol., large 8vo. Pp. 1340. Brussels, 1899–1904.]

This work (*cf.* 'Ibis,' 1904, p. 147), now quite complete, consists of two volumes, paged continuously. The Index of species and subspecies recently issued is very full, and renders the Synopsis a most useful book of reference to the working Ornithologist. Twelve thousand species are enumerated, besides 3327 subspecies, and references are given to the *patria* of each and to the publications in which it is to be found described.

7. *Ehmcke on some new Larks.*

[Beschreibung einiger neuer Lerchenarten aus den Museen von Sarajevo und Budapest. Von A. Ehmcke. Ann. Mus. Nat. Hung. ii. pp. 296–301 (1904).]

In this remarkable paper, after a few preliminary sentences, 10 supposed new species of *Alauda* are described :—*A. intercedens* from Greece, *A. balcanica* from the Balkans, *A. minuta* from Caucasia, *A. schach* from Persia, *A. beludshistana* from Persian Beloochistan, *A. cypriaca* and *A. insularis* from Cyprus, *A. sordida* from Hungary, *A. subtilis* from Montenegro, and *A. transcaspica* from Transcaspia.

8. *'The Emu.'*

[The Emu. A Quarterly Magazine to popularize the Study and Protection of Native Birds. Official Organ of the Australasian Ornithologists' Union. Melbourne. Vol. iii. pt. 4; Vol. iv. pt. 1 (April to July, 1904).]

The chief contributor to these parts of 'The Emu' is Mr. A. W. Milligan, who, besides describing a supposed new species of Kestrel (*Cerchneis unicolor*) from Yalgoo, in North-Western Australia, contributes "Notes on a Trip to the Wongan Hills, West Australia," the first part of which is devoted to an account of the birds, and the second to the nests and eggs procured, with a discussion of the effects of the soil and its flora on the distribution of species. The most important items are the discovery of a new Honey-eater (*Ptilotis novæ-norciæ*) and of the nest of *Acanthiza pallida*, while *Lipoa ocellata* and *Psophodes nigrogularis* are said to have abandoned the district. Mr. E. Degen writes on the genus *Gymnorhina* and on the Australian birds in the Zoological Gardens (London); Mr. T. Carter concludes his account of the birds of the North-West Cape; Miss J. A. Fletcher and Mr. F. M. Littler contribute further papers on Tasmanian birds; Mr. R. Hall describes as a new subspecies *Mirafra horsfieldi pallida* from West Australia; and Mr. R. C. McGregor, of the Philippine Museum at Manila, gives us his ideas on scientific bird-names. Among the minor contributions are some interesting excerpts from the Journal of Willem de Vlaming, concerning a voyage in the 'Nijptang' to Australia in 1677.

The plain plates are of *Podargus strigoides*, its nest and young, *Ninox boobook*, and Wongan Hills scenery: the coloured plate represents *Ptilotis carteri* and *Melithreptus brevirostris*.

9. *Fatio on the Birds of Switzerland.*

[Faune des Vertébrés de la Suisse. Par Victor Fatio, Dr. Phil. Vol. II. Oiseaux, 2^me Partie: Gyrateurs, Sarceleurs, Échassiers, Hérodiones, Lamellirostres, Totipalmes, Longipennes et Uropodes. Avec 1 planche en couleurs hors texte, 120 figures originales dans le texte, 23 tableaux, et une 2^e appendice à la première partie. Genève et Bâle: Georg & Co., 1904.]

In 'The Ibis' for 1900, p. 681, we welcomed the first instalment of this elaborate work; and the second portion is even better than its predecessor, for the excellent reason that in it are treated the "game-birds," including the waders, which appeal to the sporting instincts of the Editor of 'La Diane.' The long descriptions of the various families, genera, and species have been conscientiously compiled, while the numerous illustrations have been drawn with the greatest care; but we are sure that Dr. Fatio's heart was really all the time with the dog and the gun, on the mountains or in the marshes of the great Swiss plain or "trough" which lies between the Jura and the Alps and extends from the Lake of Constance to Lake Léman. Hence the sympathetic description of the Tetraoninæ and their hybrids, the Partridges, Quail, Rails, Woodcock, Snipe, and Ducks; as well as the highly satisfactory manner in which he has traced the lines of passage of these and other migrants. Among the rarest of the accidental visitors may be noticed one example of the American Spotted Sandpiper, recorded from Sins, Canton Argau, in June 1901; one Black Guillemot, from the northern end of the same Canton; and one Puffin from Lake Léman. Very few examples of the Three-toed Sand-Grouse were obtained in 1863, and none are recorded for the great irruption of 1888. There are no collections of living "waterfowl" in Switzerland, and, as a coincidence, there are no records of any species of *Porphyrio*. We are rather surprised that Dr. Fatio makes no allusion, even in a footnote, to the identification by Messrs. Rothschild, Hartert, and Kleinschmidt ('Novitates Zoologicæ,' iv. p. 371) of the Red-cheeked Ibis with the *Waldrapp* of Conrad Gesner, a bird which nested in Switzerland in the sixteenth century. Flamingos have occurred, not infrequently, even in the northern cantons; but Pelicans have, as yet, stopped at Canton Ticino, on the Italian side. Many species, however—Ducks, Gulls, Terns, and Divers,—have regular crossing-places in the Upper Engadine, at elevations reaching to 7800 feet, and even remain for some time on the lakes there.

In the Appendix to the first Part we find *Buteo ferox*, *Emberiza melanocephala*, and *Melanocorypha tatarica* added to the Swiss list. The Index is full; there is a good synoptical table, with diagnoses; and the bibliography is adequate.

The statements that the Great Snipe, the Jack Snipe, and the Knot nest in Switzerland may evoke scepticism, and we cannot accept the honour conferred upon England in ascribing Temminck's Stint (*Tringa temmincki*) to us as a *breeding* species. But these are slight blemishes in a work which consists of 1753 pages and an Introduction.—H. S.

10. *Ghigi on the Genus* Tragopan.

[Studi sul genere *Tragopan* Cuvier.—Memoria del Prof. Alessandro Ghigi. Mem. Acc. Sc. Bologna, ser. 5, tom. x. Sc. Nat. pp. 151-166, tav. 2.]

This memoir relates primarily to the structure of the caruncles on the head of the male Tragopan, in describing which the author criticizes certain statements made by Dr. Murie in his essay on this subject published in 1872 (P. Z. S. 1872, p. 730). Observations made on living specimens and a systematic revision of the species of the genus are added. A description of the little-known female of *Tragopan caboti* is also given.

11. *Hartert's Nomenclatorial Rectifications.*

[Einige nomenklatorische Betrachtungen. Von Dr. Ernst Hartert. Zool. Anz. xxviii. No. 4 (1904).]

The author, after some excellent preliminary remarks, points out two recent cases in which the zealous advocates of "unrestricted priority" appear to have outrun their discretion. Although it is generally allowed that Moehring's 'Genera Avium' (1752) cannot be recognised in binomial nomenclature, Herr Poche (Zool. Anz. xxvii. p. 495) has put forward the claim of Nozeman's Dutch translation (1758) of the same work to render Moehring's genera valid. But Dr. Hartert shews that this view is untenable, because Nozeman translated Moehring's generic terms into Dutch, instead of repeating them in Latin, and could not, therefore, be said to have adopted them. It is therefore not necessary to use "*Buteo*" instead of *Palæornis*, and "*Nisus*" in place of *Centropus*, as Herr Poche so judiciously suggests!

The second case which Dr. Hartert discusses is the claim put forward by Prof. Reichenow and others for the admission of Hasselquist's 'Iter Palæstinum' into binomial nomenclature. The original edition of Hasselquist's work (1757) is clearly "out of court," even for those who begin nomenclature with the tenth instead of the twelfth edition of the 'Systema.' But it is maintained that Hasselquist's names are brought into the regular category by the German translation of 1762. This view Dr. Hartert shews to be untenable, because the original work was edited by Linnæus after the death of Hasselquist, so that the names used in 1762 should not be properly attributed to Hasselquist but to Linnæus, who in 1757 had not adopted binomial nomenclature.

12. *Hartert's 'Miscellanea Ornithologica.'*

[Miscellanea Ornithologica, and other Notes mostly on Palæarctic Birds. By Ernst Hartert, Ph.D. Nov. Zool. xi. p. 457 (1904).]

These notes have been made by Dr. Hartert during the preparation of his work on Palæarctic Birds, and though some of us may not altogether agree with his conclusions, they deserve careful consideration. He points out that three subspecies of *Carpodacus thura* should be recognised. The proper specific name of the Sepoy Finch (*Hæmatospiza sipahi*), he considers, should be "*indica* (Gm.)." This we are of opinion is not "fully proven." But we quite allow that *Carpodacus sinaiticus* should be more correctly called *C. synœcus* Temm. Notes on the genus *Passer* follow, and contain various remarks on the synonyms and rectifications of its puzzling members.

Dr. Hartert then takes up Stoliczka's much-neglected *Linota pygmæa*, described in 1868 (J. A. S. B. xxxvii. pt. 2, p. 62), which he is inclined to refer to a young *Serinus pusillus*. Discussing the species of Crossbill, our author comes to the conclusion that the true *Loxia pityopsittacus* of Borkhausen (1796), but not of Bechstein (1802), is "totally different" from the large-billed Scottish bird which is commonly referred to it, which he calls *L. curvirostra scotica* (*cf.* Vög. pal. Fauna, p. 120). Lastly, Dr. Hartert writes of the forms of *Passer simplex.*

13. *Harvie-Brown and Macpherson on the Birds of the North-west Highlands.*

[A Fauna of the North-west Highlands and Skye. By J. A. Harvie-Brown and Rev. H. A. Macpherson. Edinburgh: David Douglas, 1904. Pp. civ & 372. Price 30s.]

The present volume of the 'Vertebrate Fauna of Scotland' brings us very near to the completion of the series, so far as the country north of the Forth and Clyde is concerned, only the areas of "Tay" and "Dee" remaining, for the former of which ample materials are already to hand. Part of this instalment consists of supplementary information on the districts west of the watersheds between Cape Wrath and Loch Broom, treated in the first volume, while the remainder traverses the North-west Highlands to the boundary of the area of "Argyll," a coloured map of the whole country being supplied for reference.

While the greatest interest attaches to these parts of Scotland, which include the former sites of the nests of so many White-tailed Eagles, Kites, and Ospreys, and are the present haunts of so large a number of Golden Eagles—not to mention Snow-Buntings, Divers, and other rare birds,—the district is remarkably poor both in species and individuals; moreover, the lines of flight of our migrants impinge but little upon its shores. The large deer-forests, however, are a specially interesting feature, and this area was of old the home of many martens, polecats, and other mammals, some of which are verging upon extinction. Sections are devoted in particular to Handa, Priest Island, and the islands near Skye, on the first of which the Fulmar Petrel has lately been found breeding.

The volumes of this series are so well known that it is unnecessary to particularise further than to say that the usual treatment of the subject is followed, the historical and physical aspects of the country being fully discussed, with lists, in conclusion, of the various species of vertebrates. In all respects this instalment attains the well-known standard of its predecessors, while a special feature is the addition of chapters on the geology by Mr. L. W. Hinxman and on the climate and its changes from the pen of Mr. Harvie-Brown, to whom we are so much indebted for his constant and valuable labours.

The present volume is dedicated to our friend and fellow-member the late T. E. Buckley, whose portrait, surrounded by those of others connected with the work, forms one of the eighteen plates which embellish the pages, in addition to many smaller illustrations. An obituarial notice of the Rev. H. A. Macpherson is also added.

The accounts of the ancient breeding-places of the Osprey, and the fine series of views of them, would alone make the book of the greatest value.

14. *Hutton and Drummond on the Animals of New Zealand.*

[The Animals of New Zealand; an Account of the Colony's Air-breathing Vertebrates. By Capt. F. W. Hutton, F.R.S., and James Drummond. 1 vol., 8vo. 381 pp. Christchurch, Wellington, and Dunedin, N.Z., Melbourne, and London. Whitcombe and Tomes, Ltd. 1904.]

The Mammals of New Zealand are few in number, as are also the Reptiles and Batrachians, so that the greater part of this volume is taken up by the Birds. A new handbook of the avifauna of New Zealand was much wanted, as Sir Walter Buller's beautifully illustrated 'History' (of which a second edition was published in 1887–8) is rather too bulky for general use, and his 'Manual' was issued twenty-two years ago.

In the present work the authors "have attempted to combine popular information with that which is purely scientific," and have certainly succeeded in compressing a large amount of useful matter into a small space. The numerous text-figures reproduced from photographs are also of much value as helps to identification, although we cannot say that they give a pleasing effect in every case. We recognise many old friends amongst them, and some of these are excellent. It may be added that the sources whence they are derived are always carefully indicated.

The extraordinary features of the Maorian Ornis, which entitle New Zealand and its satellites to rank as a distinct subregion, are well known, and need not be discussed on the present occasion. But the remarkable fact that the islands are regularly visited in the summer by two species of parasitic Cuckoos, which arrive from the north to lay their eggs in other birds' nests, is one that is always worthy of special mention.

One more subject in relation to the birds of New Zealand must be alluded to, and it is a sad subject—the gradual destruction of the native forms. "It cannot be doubted," the authors of the volume tell us, "that the ancient Fauna, as a whole and as it existed in its original state, is fast departing," and there seems to be no prospect of saving it. Many species are already extinct, others barely survive. Two "sanctuaries" have been established—Little Barren Island in the north, and Resolution Island in the south, but this does not seem to have improved matters much. "Try as we may we can never bring back the departed birds." Smiling homesteads and well-tilled fields do not suit them. "Their habitations have been laid waste and their glory is departed."

15. *Jägerskiöld on Birds from the White Nile.*

[Birds from the White Nile. By L. A. Jägerskiöld. Results of the Swedish Zoological Expedition to Egypt and the White Nile, 1901. Part I. 18 pp. 1904.]

In 'The Ibis' for 1903 (p. 421) we gave a notice of Dr. Walter Innes Bey's journey to the White Nile in 1901, in company with the expedition sent out from Sweden, under the direction of Mr. L. A. Jägerskiöld, for the purpose of studying the Fauna of the Sudan and the adjoining districts. We have now a list of the species obtained or observed by the Swedish Naturalists on this occasion, with short field-notes on each of them. They are 129 in number, but none are new.

16. *Kollibay on the Birds of the Bocche di Cattaro.*

[Die Vogelfauna der Bocche di Cattaro. Von Paul Kollibay. Journ. f. Orn. 1904, p. 457.]

We have now received a separate copy of the second and concluding portion of this excellent memoir, the first part of which we have already noticed ('Ibis,' 1904, p. 651). It contains a series of field-notes on the birds of this attractive spot, altogether 223 in number, taken from the observations of the author and his fellow-workers in the same district.

The country is rich in Buntings, no less than seven being included in the List, of which the brilliant *Emberiza melanocephala* is of special interest. It arrives from the south in May, and nests in June. Herr Kollibay puts its simple song into musical notes.

Altogether the Bocche di Cattaro must be a delightful place for an ornithological excursion.

17. *Meyer on Birds from South-east Celebes.*

[Vögel von Südost Celébes. Von A. B. Meyer. Notes Leyden Mus. xxiv. pp. 232-235.]

Dr. Meyer catalogues thirteen species of birds of which examples were obtained by the brothers Sarasin during their recent expedition across the south-eastern arm of Celebes. One of these species, *Zosterops consobrinorum*, is described as new to science.

18. *North on the Nests and Eggs of Australian Birds.*

[Nests and Eggs of Birds found breeding in Australia and Tasmania. By Alfred J. North. Part IV. Sydney, 1904.]

Mr. North continues his attractive work on the nests and eggs of Australian birds, to which we have called special attention on former occasions (see 'Ibis,' 1902, pp. 156, 660, and 1903, p. 622). In this part he proceeds with his account of the Passerines of various groups, and, besides illustrations in the text, gives us large and beautifully drawn plates of the nests of *Malurus melanocephalus*, *Acanthiza pusilla*, *Orygma rubricatum*, and *Pomatostomus temporalis*, with three of eggs. The notes on nesting are very full and complete.

19. *North on Australian Birds.*

[(1) Description of a new Species of *Poëphila.* By Alfred J. North. Records Austr. Mus. v. pt. 4 (1904).

(2) On Heterochrosis in Australian *Psittaci.* Id. ibid.

(3) On the Bower of the Eastern Bower-bird, *Chlamydodera orientalis* Gould. Id. ibid.

(4) Description of the Eggs of the White-quilled Rock-Pigeon, *Petrophassa albipennis* Gould. Id. ibid.]

Mr. A. J. North sends us copies of four short contributions to the 'Records of the Australian Museum.' In the first he describes a new *Poëphila—P. neglecta,* probably from Queensland, and states that *P. nigrotecta* Hart. (Bull. B. O. C. viii. p. lix, 1899) is apparently the same as *P. atropygialis* Cart. et Rams. Proc. Linn. Soc. N.S.W. i. 4, 1877, p. 382. In the second he describes cases of xanthochroism, melanism, erythrism, albinism, and other abnormal plumages in Australian Parrots. In the third he describes and figures the bower of *Chlamydodera orientalis* from N.E. Queensland. In the last he describes the eggs of the rare Rock-Pigeon, *Petrophassa albipennis,* from N.W. Australia. The nest of this Pigeon is placed on the ground.

20. *Patterson's 'Notes of an East Coast Naturalist.'*

[Notes of an East Coast Naturalist. By Arthur H. Patterson. Illustrated by F. Southgate. London, 1904. Price 6s.]

When in 1868 the British Association met at Norwich, a local naturalist proposed to arrange an excursion to "The Broads," for the delectation of Section D, then comprising Zoology and Botany. The scheme failed, for none but the East Anglians present seemed to have even heard of the existence of "The Broads," and were incredulous of assurances that the district was worth a visit, as one of unique character in England, and of especial interest on account of its Fauna and Flora. The six-and-thirty years since passed have seen a great change wrought, and nowadays the Broads of Norfolk are as much overrun with excursionists—yea, "trippers" of the baser sort—as Blackpool or Southend, to the detriment, of course, of their natural charms and of their natural inmates, the human native perhaps excepted. We cannot pretend that some of their original glory had not departed by 1868—to have seen that one would have had to go back some thirty or forty years, if not more, to the days of Girdlestone, Hoy, Richard Lubbock, the Pagets, Scales, Whitear, and others whose names are well known to the naturalists of Norfolk and Suffolk; but still the district retained much of its original character which has since, to a great extent, disappeared. With the invasion of the "tripper" has come the publication of many books on the Broads, mostly of the quasi-naturalist kind now so popular—occasionally right when the author "cribs" from good sources, but generally wrong when he trusts to his own judgment, and by florid writing tries to hide his own ignorance. In marked contrast to such books is Mr. Patterson's little volume before us, which tells the plain tale of a true observer, and is of itself worth more than the whole of the rubbish just mentioned. Yet all will agree that it would have been far more convenient had a little more order been observed in arrangement of the notes, though this defect is somewhat remedied by an index, which, so far as we have tested it, seems to be extremely good. We do not intend to go into any of the notes: some may be thought hardly worth recording, but there is a fresh wholesome air of reality about all of them which makes it hard to say which should have been excluded. The author's capacity as an observer is exemplified by the fact that he recognised a strange bird, while on the ground, as a Pectoral Sandpiper, which being shot shortly after proved to be so—only not the ordinary American form, but the Asiatic *Tringa acuminata*. A dozen coloured plates by Mr. Frank Southgate shew very remarkable power in depicting birds, and most decidedly embellish this little book.

21. *Rothschild and Hartert on some Papuan Birds.*

[Berichtung. Von Dr. Walter Rothschild und Ernst Hartert. Ann. Mus. Nat. Hung. i. p. 447 (1903).]

The object of this article is to shew that Dr. J. v. Madarász was in error in his treatment of a small collection of birds which was sent to the Hungarian National Museum by Graf Rudolf Festetich, and was described by Dr. Madarász as being from Bougainville Island of the Solomon group. On re-examination at Tring these birds have been identified as belonging, with one exception, to well-known species of German New Guinea. The exception is *Eclectus pectoralis salamonensis* Rothsch. & Hart., which is really from Bougainville. The importance of having all specimens correctly labelled immediately they are obtained is commented on.

22. *Schnee on the Land-fauna of the Marshall Islands.*

[Die Landfauna der Marschall-Inseln nebst einigen Bemerkungen zur Fauna der Insel Nauru. Von Dr. med. Paul Schnee. Zool. Jahrb., Syst. xx. pp. 387–412 (1904).]

The Marshall Islands lie in the Pacific, between the Carolines and the Gilbert group, from 5° to 14° N. lat. They are about thirty-four in number. The author, who passed many years on medical service in Jaluit, the principal island, has put together in this article a summary of its land-fauna, the list of birds having been compiled for him by Prof. Reichenow. The 24 species are nearly all Waders and Sea-birds, except the wandering Cuckoo, *Eudynamis taitensis*, as has been long ago shown by Dr. Finsch (see 'Ibis,' 1880, p. 329). The *Tatare* of the group (*T. rehsii*) is said to be extinct on Jaluit, though still existing on Nauru (*cf.* Finsch, 'Ibis,' 1883, p. 143).

23. *Scott and Sharpe on Patagonian Birds.*

[Reports of the Princeton University Expeditions to Patagonia 1896–1899, J. B. Hatcher in Charge, edited by William D. Scott. Volume II. Ornithology, Part I. Rheidæ—Spheniscidæ. By William Earle Dodge Scott, Princeton University, associated with R. Bowdler Sharpe, British Museum of Natural History. 4to. 112 pp. Princeton, 1904.]

We are glad to receive the first Part of Mr. W. E. D. Scott's work on the Birds of Patagonia. Originally based on the collections made by the Princeton University's Geological Expeditions to Patagonia (1896–99) under the charge of Dr. J. B. Hatcher, it has been augmented by the careful studies of the author in the British Museum into a complete monograph of Patagonian ornithology, which promises to be a very useful piece of work. The author has been much assisted in his labours by Dr. Bowdler Sharpe, whose name is also on the titlepage, and whose classification is followed.

This Part begins with the Rheas and Tinamous, and passes upwards to the Pigeons, Rails, Grebes, and Penguins. After a complete synonymy and detailed description of each species, the known particulars of its history and habits are given, and many illustrative figures are introduced in the text. The progress of this important work has been much delayed by the state of Mr. Scott's health, but we may now hope to see it completed shortly.

24. *Sharpe on the Ornithological Literature of* 1903.

[The Zoological Record, Vol. XL. 1903. III. Aves. By R. Bowdler Sharpe, LL.D. &c. Printed for the Zoological Society of London. 8vo. 72 pp. Price 6s. August 1904.]

In our last number ('Ibis,' 1904, p. 645) we gave a long notice of the "Birds"-section of the 'International Catalogue of Scientific Literature,' and explained the reasons why we were constrained to pronounce it to be *not a success.* It is only fair now to say a few words about the corresponding portion of the 'Zoological Record,' which, as we shall shew, is superior to it in every way. In the first place, we have in August 1904 the record of the ornithological literature of 1903 ready for consultation nine months after the year is closed, instead of having to wait two years for it, as was the case with the corresponding record of the International Catalogue for 1901. In the second place, the price of the whole volume of the 'Zoological Record' is 20*s.** against 37*s.* 6*d.* for the International Catalogue; and last, but not least, the "Aves" of the 'Zoological Record' is a complete and solid piece of work in strong contrast to the corresponding portion of the International Record, which, as we have clearly shown, is just the contrary.

The number of the titles in the list of ornithological publications which commences this division of the 'Zoological Record' is 724. Then follows the "Subject Index," which, although it contains only 36 pages, is, in our opinion, much clearer and more intelligible than the comparatively bulky Index of its rival.

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* Under a new arrangement the "Aves" of the 'Zoological Record' may be purchased separately at the very moderate price of 6*s.*

25. *Sæmundsson's Zoological Notes from Iceland.*

[Zoologiske Meddelelser fra Island. Vid. Meddel. fr. d. naturh. Foren. i Kbhvn. 1904.]

After describing the capture of three fishes new to Iceland the author gives notes on 28 species of birds, of which three are new to that island, viz. *Ampelis garrulus*, *Upupa epops*, and *Ceryle alcyon*. He also remarks that *Troglodytes parvulus* is not so rare in Iceland as was supposed by the Rev. Mr. Slater, and likewise that *Strepsilas interpres* certainly winters there. *Fringilla cœlebs*, a fourth species new to Iceland, is included with a query, as the specimen referred to had not come to hand.

26. *Swenander on the Stomachs of African Birds.*

[Untersuchungen über dem Vorderdarm einiger Vögel aus dem Sudan. By Gust. Swenander. Results of the Swedish Zoological Expedition to Egypt and the White Nile, 1901. Part I.]

The Naturalists of the Jägerskiöld's Expedition of 1900–1 (see above, p. 126) made a collection of the stomachs of the birds obtained on the White Nile, upon which Mr. Swenander now reports. They belong to 18 species, concerning each of which notes are given. Two plates illustrate peculiarities in the intestinal organs of *Pseudotantalus ibis*, *Leptoptilus crumenifer*, several species of *Ibis*, and other birds.

27. *Tanner's Observations in Tenerife.*

[Beobachtungen auf Tenerife. Von Rudolf von Tanner. Nov. Zool. xi. p. 430 (1904).]

Herr von Tanner has been resident in the interior of Tenerife for more than two years (*cf.* 'Ibis,' 1904, p. 670), and has had, therefore, better opportunities of studying the bird-life of that interesting island than previous visitors who have made only short stays, mostly in the winter and spring. He has paid special attention to the migrants, among which he specifies *Turdus musicus*, *Anthus arboreus*, *Motacilla alba*, and *Vanellus cristatus* as regular visitants. Many field-notes on various resident species and occasional visitors are given.

28. *Todd on the Birds of Erie District, Pennsylvania.*

[The Birds of Erie and Presque Isle, Erie County, Pennsylvania. By W. E. Clyde Todd. Ann. Carnegie Mus. ii. pp. 481–596.]

This is a paper on a local Avifauna, but is perhaps of greater general interest than many of its fellows. A considerable portion of Western Pennsylvania borders on Lake Erie, and the author, who has lately been attached to the great Carnegie Museum at Pittsburgh, was sent, accompanied by a taxidermist, on a special mission to obtain a series of birds from that district. In this mission he appears to have achieved considerable success, having secured nearly 1000 specimens in a few months. The present memoir is based mainly upon this collection, but includes all other available information upon the birds of the Erie district. The species recorded in the list are 237 in number and the field-notes are ample and well written. The occurrence of Brünnich's Murre (*Uria lomvia*) so far from the sea-coast is interesting. In December 1896 a large flight of these birds seems to have made its way up the basin of the Great Lakes far into the interior. Other stray specimens of the same species were obtained in the winter of 1899–1900. The Passenger Pigeon (*Ectopistes migratorius*), formerly "very abundant," is now "almost exterminated"; the last recorded specimens were killed in 1889.

29. *True on the U.S. National Museum in* 1903.

[Report upon the Condition and Progress of the U.S. National Museum during the Year ending June 30th, 1903. By R. Rathbun. Washington, 1904.]

The portion of this report relating to the Department of Biology is by Mr. Frederick W. True, the Head Curator.

It gives a good account of the general progress of the Department, although we observe that the laboratories of the "Division of Birds" are stated to be still "much overcrowded," and that "many devices have to be resorted to in order to accommodate the collections." It has even been found necessary, we are told, "to place different parts of the collection in rooms widely separated." The study-collection comprises some 65,000 specimens, of which the Passerine series is well arranged and "entirely accessible," being kept in good order, no doubt, for the progress of Mr. Ridgway's great work. It seems hard that a branch of zoological science that has so many excellent followers in the U.S. should not meet with more liberal treatment (*cf.* 'Ibis,' 1904, p. 481).

The following notable accessions to the bird-collection are specially mentioned:—Mr. Homer Devonport had presented 22 large and valuable birds from his Aviary, among which were an Australian Goose, a Javan Jungle-fowl, a Black-winged Peacock (*Pavo nigripennis*), and several beautiful Pheasants, including an example of Diard's Fireback (*Lophura diardi*). From Mr. A. Boucard were purchased skins of two rare Birds-of-Paradise, *Paradisea gulielmi* and *Rhipidornis gulielmi-tertii*. A pair of flightless Cormorants from the Galapagos, and about 300 birds from that group and the islands on the west coast of Mexico, were also purchased. The Bishop Museum, Honolulu, had presented a collection of birds from Guam, containing examples of about 44 species new to the U.S. Museum. Mr. Outram Bangs had presented about 50 birds from Honduras, and 300 specimens from Chiriqui were received from him in exchange. The Biological Survey had transmitted a fine series of birds'-eggs from different parts of North America.

30. *Winge on Birds of the Bronze Age in Denmark.*

[Om Fugle fra Bronzealderen i Danmark. Vidensk. Meddel. fr. d. naturh. Foren. i Kbhvn. 1904.]

Mr. Winge gives particulars of the wing-bones of the Jackdaw and Crow (or Rook) found in an urn of the Bronze

Age together with the bones of a young person, and surmises that they were placed there to carry the soul of the departed to the "unknown land." He also gives particulars of the bones of other species of birds found along with human remains from the Bronze Age.

31. *Winge on the Birds of the Danish Lighthouses*, 1903.

[Fuglene ved de danske Fyr i 1903. Vidensk. Meddel. fr. d. naturh. Foren. i Kbhvn. 1904, p. 319.]

The twenty-first of these excellent reports relates to the birds obtained at the Danish Lighthouses in 1903, and transmitted to the Zoological Museum in Copenhagen. They were 1138 in number, and are referred to 67 species; they were received from 35 stations, which are carefully enumerated and plainly shown on the accompanying map. The usual notes are given. The most numerous species in the List are *Alauda arvensis* (256 ex.), *Erithacus rubecula* (183 ex.), *Turdus musicus* (73 ex.), and *Sturnus vulgaris* (99 ex.). Of *Regulus cristatus* 33 examples were obtained.

XI.—*Letters, Extracts, and Notices.*

We have received the following letters addressed to "The Editors of 'The Ibis'":—

Sirs,—Mr. Harvie-Brown, in his letter to you of Sept. 1st, 1904 ('Ibis,' 1904, p. 664), criticises my article on nomenclature in connection with Barn-Owls (Bull. B. O. C. xiv. p. 87). I am always willing to accept every criticism so long as I am allowed to defend my own standpoint in return. I therefore venture to ask you to receive this reply to Mr. Harvie-Brown.

I would first wish to point out that Zoological Nomenclature does not stand alone in the world in promoting strife on all points of doubt or innovation. From the earliest historical period every innovation in Philosophy, Physics, Mechanics, Astronomy, Locomotion, Medicine, Surgery, in fact in every branch of human intellectual or material progress, has been fought and opposed tooth and nail by those who have been brought up in the schools of thought of the previous epochs. Nevertheless, we have always ended by adopting these innovations. So I feel sure it will be with zoologists, when once they have grasped the meaning of the trinomial nomenclature as applied to geographical races. Mr. Harvie-Brown has quite misunderstood the nature of trinomials. He says in effect that the trinomial is justified only so long as it has a "distinctive geographical descriptive power." This is an impossibility, for by far the largest number of trinomially treated forms have been previously described binomially.

Such is the case with my *Aluco flammea nigrescens,* which has been described as *Strix nigrescens* by Lawrence. Such was also the case with *Dendragapus obscurus richardsoni,* which had been described as *Canace obscurus,* var. *richardsoni.* In both these cases the geographical race had been given a name which no one could be justified in changing into *Aluco flammea dominicensis* or *Dendragapus obscurus montanensis.* The question of calling the forms *Aluco flammea* I., II., III., &c., or *a, b, c,* &c., is only raising a quibble, and, moreover, a very dangerous quibble; for it is much easier for numbers or letters to be accidentally transposed than quite distinct third names. If, as Mr. Harvie-Brown suggests, we were to add the geographical range and the exact locality to each specimen quoted in print, we should be doing exactly what those who use trinomials avoid, namely, we should be giving a long, many-worded description instead of a short name.

As to the question of different habits of different subspecies, Mr. Harvie-Brown, I fear, has entirely misunderstood the purpose of my instancing the habits of the Robin abroad and in England. But the greatest justification for my calling the English Robin "*Erithacus rubecula melophilus,*" instead of the "dark-breasted English form of *Erithacus rubecula,*" is that while our indigenous Robins are all *E. r. melophilus* and easily recognisable in the skin or alive, at Brighton and in other south- and east-coast localities continental Robins are blown across, and so we get in England both *Erithacus rubecula rubecula* and *Erithacus rubecula melophilus,* though the former is purely an accidental visitor.

In conclusion, I only wish once more to urge strongly that the opponents of trinomials, before they criticise and run down those who employ them, should for once seriously consider what trinomials are. The most ardent opponents of trinomials admit every day names such as "*Pelecanus fuscus,* var. *californicus,*" but exclaim loudly if an unfortunate writer like myself ventures to leave out the abbreviated word "var." for the sake of brevity, and writes the name of the Western Brown Pelican, *Pelecanus fuscus californicus.*

I am, Sirs, yours &c.,
WALTER ROTHSCHILD.

Zoological Museum, Tring,
24th October, 1904.

SIRS,—I am now able to give a complete account of the development of Ross's Goose, *Chen rossi* (see 'Ibis,' 1904, p. 73). This season my female laid three eggs, and as in previous years she had proved to be a bad mother, I took the eggs away and put them under a common hen. The period of incubation was 24 days this time, and the eggs were hatched on the 10th of July. All the three eggs were hatched, but, unfortunately, the hen in some way or other killed two of the chicks the same day that they were born. The third escaped this fate and was tenderly cared for by its foster-mother. I have described in detail the colour of the down in a previous letter ('Ibis,' 1903, p. 245), so that it will suffice to say that the chick was a fluffy object with grey down and a bright canary-yellow head.

The little bird grew very rapidly, and when two weeks old was about the size of a Japanese bantam-hen. The bill was still black at this stage with a pink tip (the nail) and the legs were greenish. When three weeks old the feathers began to appear on the shoulders, the flanks, the tail, and the wings. When four weeks old the bird was about the size of a small hen. The body was almost entirely feathered, but the head and neck were still in down. The legs were bluish and the bill was getting lighter in colour. When five weeks old the whole body was feathered, and when six weeks old even the flight-feathers were of their full length. The first plumage may be described as follows:—

General colour white. A brownish-grey spot on the occiput, which runs down along the back of the neck. The base of the neck and the mantle brownish grey, forming a crescent of that colour, of which the points are turned forward on each side of the base of the neck. The smaller wing-coverts are of the palest brownish grey, with a dark spot at the tip of each feather. The flanks are grey; the large flight-feathers black. The first five secondaries have a dark spot in the centre; those that follow are white, with only a very slight sprinkling of brownish; the three innermost have dark centres, and the white edges are finely spotted with grey. The tail is white, with only a suspicion of a greyish tint on the middle feathers. The legs are greenish grey with pink shining through. The bill is pinkish; the lores are blackish grey, which colour extends over and behind the eyes.

When ten weeks old the bird began to moult, and the grey feathers of the juvenile dress were rapidly replaced by white ones. Also the large tail-feathers were moulted, the central rectrices being dropped first. The legs now began to turn pink in earnest, and the bill assumed its double coloration of a greenish base and a pink tip.

I am, yours &c.,
F. E. Blaauw.

Gooilust, 'sGraveland, Holland,
October, 1904.

Sirs,—I wish to point out that an unfortunate mistake has occurred in my remarks on the birds of Jamaica ('Ibis,' 1904, p. 577). The Vulture that is so common in the town of Kingston is the red-headed *Cathartes aura*, and not the black-headed *C. atratus*.

I am, yours &c.,
Michael J. Nicoll.

10 Charles Road, St. Leonard's,
October, 1904.

Sirs,—In the last volume of the 'The Ibis' I find (p. 480) a notice of Dr. Finsch's departure from the Leyden Museum.

In that article you say that Prof. Schlegel, up to his death in 1882, had catalogued some 18,000 specimens of birds, representing 2300 species, in his 'Muséum d'Histoire naturelle des Pays-Bas,' but that after that date little was done among the birds until 1898, when Dr. Finsch took up the matter and began a new catalogue, which contains entries of some 13,000 specimens, referable to 3000 species.

It is not my intention to enter upon the question how far a mere manuscript list of genera and species of birds, such as that made by Dr. Finsch, should be placed on the same level as the highly esteemed work done by Prof. Schlegel in his well-known eight volumes of the 'Muséum d'Histoire naturelle des Pays-Bas'; but I cannot help saying that your remark upon the period between 1882 and 1898 is far from courteous to me, who occupied the position of Conservator of the Ornithological Department at the Leyden Museum from 1884 to 1897.

It is true that I have not, like Dr. Finsch, left behind "a Catalogue" with entries of so and so many species and specimens of birds, but nevertheless I should say that the determination, labelling, and arranging of thousands of birds, comprising whole families, which were still in the same state as that in which I left them there in 1897, may have facilitated to some extent the work of Dr. Finsch above alluded to.

I am well aware that you could not be precisely informed about this kind of unpublished work of mine in the Leyden Museum—a work which, it seems to me, is just as valuable as that attributed to Dr. Finsch; but from all that I published in the 'Notes from the Leyden Museum' during that period (interrupted as it was by my second journey to Liberia and a year's stay in the Dutch East Indies), you might have concluded that it was not so very little that I did in the Leyden Museum between 1884 and 1897.

Had it not been for the sake of my good name amongst my colleagues and friends who may read your article, I certainly would not have troubled you with this rectification, for which, however, I feel sure you will not object to allow a little space in the forthcoming number of 'The Ibis.'

I am, Sirs, yours &c.,
J. Büttikofer.

Rotterdamsche Diergaarde,
Rotterdam,
19th November, 1904.

[We much regret to find that the paragraph in question should be construed as involving any depreciation of Dr. Büttikofer, whose excellent work in zoology is known to all of us, and we can assure him that nothing could be farther from our thoughts.—Edd.]

Sirs,—The adoption or non-adoption of the trinomial system is such an important resolve that I would crave space to urge most earnestly that the subject should be studied with the great attention that it deserves. Above all, let existing prejudices be thrown to the winds, for to be conservative on principle, without weighing arguments, is surely unscientific.

In 'The Ibis' for October 1904, Dr. E. Hartert brought forward some strong arguments in favour of the trinomial system; but there is a point on which he did not touch, and on which I should like to make a few remarks.

I have often heard it argued that the trinomial system necessitates finer divisions than the binomial. In reality, however, "fine splitting" is an individuality and is practiced by both trinomialists and binomialists; but whereas the "subspecies" of the trinomialists can be ignored in a general survey of a genus, every fine division of the binomialist has to be considered.

I am sure that soon it will be generally recognised that the binomialist is creating the greatest possible confusion by describing what are nothing more than geographical races of known species under two names, without making any distinction between these races and well-marked species.

In my opinion, those who cling to two names, and two names only, should describe and name nothing but distinct species and leave geographical races entirely alone; otherwise, if a continuance is made of the practice of naming geographical races just in the same way as full species a knowledge of the true relationship of birds will become an enormous difficulty.

I think it is generally acknowledged that there *are* such things as geographical races, and that it is an advantage to our science that they should be named and described. If so, and if the above-given argument against the practice of naming such races on the binomial system be accepted, what system are we to adopt?

What alternative is there to the trinomial system?

Yours faithfully,

HARRY F. WITHERBY.

Holmehurst,
Burley, New Forest,
November 22nd, 1904.

The South-African Ornithologists' Union.—The first Annual Meeting of the newly constituted "South-African Ornithologists' Union" was held in the Transvaal Museum at Pretoria on October 8th, 1904. In the absence of the President (Mr. W. L. Sclater), Mr. J. Burtt Davy, F.L.S., took the Chair. The Hon. Secretary, Mr. Alwin Haagner, read a report, which shewed that, since the inaugural meeting on April 9th (see 'Ibis,' 1904, p. 478), 14 new Members had joined the Union, bringing the total numbers up to 53. The following officers were elected for the ensuing year:—Mr. W. L. Sclater, *President*; Dr. J. W. B. Gunning and Dr. S. Schönland, *Vice-Presidents*; and Mr. A. K. Haagner, *Secretary*. The name and scope of the proposed new Journal were discussed, but not finally decided upon.

The Antarctic Exhibition.—The Antarctic Exhibition, lately opened at the Bruton Gallery, Bruton Street, Bond Street, is well worthy of a visit from the ornithologist. Besides numerous photographs taken by Engineer-Lieutenant Skelton, who was Chief Engineer of the 'Discovery' in the National Antarctic Expedition, it contains the whole series of water-colour drawings made by Dr. Edward Wilson, the Junior Surgeon and Naturalist, who is an accomplished artist, and is especially happy in his sketches of living animals. More than 80 of these sketches illustrate the bird-life of the Antarctic Seas, among which the Emperor Penguin (*Aptenodytes forsteri*) and its smaller associate *Eudyptes adeliæ* are conspicuous.

New Discovery of Dodo's Bones.—Prof. Newton announces in 'Nature' (Oct. 27th, 1904) the discovery by M. Thirioux in Mauritius, about 2½ miles from Port Louis, of a small partly collapsed cave, about 800 feet above the sea-level, containing numerous bones of the Dodo (*Didus ineptus*) and other extirpated birds, such as the Brevipennate Parrot (*Lophopsittacus mauritianus*), the "Poule Rouge" (*Aphanapteryx broecki*), and the Great Coot (*Fulica newtoni*). Some of the smaller Dodo-bones are of great rarity, and at least one of them (the pygostyle) had not been found before. M. Thirioux has disposed of his very considerable series of these bones to the Museum of Mauritius. Prof. Newton expresses a hope that some competent person may be found to publish a scientific description of this important collection.

The Agaléga Islands.—Some years ago ('Ibis,' 1897, p. 145) we ventured to recommend the Agaléga group, in the Indian Ocean south of the Seychelles, as a desirable place for the attention of ornithologists, birds being stated to be very numerous there. We are pleased to observe that the proposed Expedition for the exploration of the Indian Ocean (see Geogr. Journ. vol. xxiv. p. 593) is likely to visit these little-known islands. It will be of great interest to ascertain whether there are any land-birds in the Agalégas, and we hope that Mr. J. Stanley Gardiner and Mr. Foster Cooper, the Naturalists of the new Expedition, will pay special attention to this point. A series of birds from this remote locality will be much appreciated, as we believe that, as regards ornithology, they are quite a *terra incognita*.

Breeding of the Screamer in Captivity.—Among the ornithological events at the Zoological Society's Gardens last year few were of greater interest than the breeding of the Crested Screamer (*Chauna cristata*), which, so far as I know, is the first instance of this bird nesting in Europe, though it is not an uncommon species in Zoological Gardens, and has been represented in the Regent's Park for many years. Two of these birds, of which the sexes are exactly alike in external appearance, paired in the spring of 1904, and eggs were laid in a large nest, made of loose sticks and placed on the ground in the Great Aviary, on the 17th, 19th, and 21st of May. A fourth egg was supposed to have been laid on the 23rd of May, but the keepers did not see it. Three young only were hatched on July 5th, after an incubation of about six weeks, in which both the male and the female took part. The chicks, which I saw a few days afterwards, were exactly like young geese in appearance and of a buffy white colour. One of them was trodden on and killed by one of its parents the same day that it was hatched, but the other two throve well, moulted in due course into their full dress, and in October were scarcely distinguishable from adults. It is now still more evident to me that the right position for the Palamedeidæ, as maintained by Parker (Proc. Zool. Soc. 1863, p. 411), is in the Order Anseres next to the Anatidæ, as they were placed in the Nomencl. Av. Neotr. in 1873.—P. L. S.

The Bewick Collection, Newcastle.—It will interest lovers of British Birds to know that, as we are informed by the 'Museums Journal,' a fine collection of the works of the famous engraver Thomas Bewick was made accessible at Newcastle-upon-Tyne in August last year. The collection was left to that city by the will of the late Sir J. W. Pease. The city had already a good series of Bewick's works in the Hancock Museum, consisting chiefly of drawings and portraits. But Sir J. W. Pease had gathered together copies of all the books illustrated by Bewick, with some of his best drawings and many engraved blocks and personal relics. These have now all been arranged in connexion with the former collection.

Meeting of the International Ornithological Congress.—The Fourth International Ornithological Congress, under the Presidency of Dr. R. Bowdler Sharpe, will meet in London on the 12th of June this year, and an Organizing Committee has been formed to make the necessary preparations. The Secretaries to the Committee are Dr. Ernst Hartert, of Tring, and Mr. J. L. Bonhote, of Ditton Hall, Cambridgeshire. The Treasurer is Mr. C. E. Fagan, of the Natural History Museum, Cromwell Road, London. It is arranged that the Congress should sit from Monday, June 12th, to Saturday, June 17th, during which period it is proposed that evening receptions and short excursions shall take place. Longer excursions will be made after the Congress is over for those who are able to remain for them. The Meetings will be held in the Imperial Institute, South Kensington. A General Committee is being formed, consisting of Ornithologists from all parts of the world. All members of the B. O. U. will receive invitations to attend the Congress. Further particulars will be given in our next number.

XII.—*Obituary.*

Carlo, Freiherr von Erlanger; Comte Amédée Alléon; Captain F. H. Salvin; and Mr. Edward Neale.

Ornithology has sustained a severe loss by the death of Freiherr Carlo von Erlanger, who lost his life in a motorcar accident at Salzburg on September 4th, 1904, when hardly 32 years old. From his boyhood Erlanger had been an ardent student of bird-life. He began to collect the birds of his native country when he was still at school, and presented many specimens to the Senckenbergische Museum at Frankfurt-a.-M. In this connexion he became first known to zoologists, for his donations were duly recorded in the Reports of the Senckenbergische Gesellschaft and his name was mentioned in the 'Catalogue of the Senckenbergian Collection of Birds.'

After having finished his studies, Erlanger went for a year to Lausanne, and for another (1895) to Cambridge, where he attended Natural Science lectures, and, after learning Arabic at the Oriental Academy in Berlin, soon began to travel. From Cambridge he visited Lundy Island, and it is hardly saying too much when it is stated that he collected birds wherever he went. In 1895 he was elected a member of the B. O. U. In 1893–1894 he made a tour in Tunis, and in 1896 started on his famous expedition to the Tunisian Sahara, where he brought together the largest and best collection of birds ever made during one expedition in that country. This collection resulted in the remarkable contributions to the Ornithology of Tunisia published in the 'Journal für Ornithologie' in 1898 and 1899, accompanied by seventeen excellent plates. This work was so important that it made its author at once famous throughout and beyond the ornithological world. Some parts of it, like his admirable treatise on the Crested Larks, will ever rank among the best articles written on the geographical forms of a group. It is a rare event that an ornithological writer begins his career with such a work. But Erlanger did not rest on his laurels, for in the same year that his Tunisian work was finished he set out on a more important expedition. On this occasion he selected Tropical Africa for his field of work. Together with Oscar Neumann, Dr. Ellenbeck, Mr. Holtermüller, and his excellent taxidermist and assistant Carl Hilgert, he started from Zeila on the Somali coast and travelled to Adis Abeba, exploring on the way Southern Abyssinia and Harar. Separating himself here from Mr. Neumann, who thence made his well-known journey to the Nile, Erlanger travelled across Somaliland to Kismayu on the Indian Ocean. This daring march—Somaliland was at that time in a state of unrest—together with the explorations in Harar and round Adis Abeba, resulted in the bringing home of 8000 bird-skins, about 1000 mammals, 400 reptiles, over 20,000 insects, and specimens of 3000 species of plants. Only a small number of the birds has as yet been worked out, but the first portion of the new series of articles, with splendid plates, has appeared in the 'Journal für Ornithologie.' A glance at it shews how careful and exact the author was—it must be admitted often with quite unrivalled series to work upon.

The chief aim of Carlo von Erlanger was to study in every detail the geographical forms (subspecies) of each species, and to investigate the actual affinity of the various described species and subspecies. He eagerly accepted Matschie's theory that the watersheds between river-systems are the principal demarcation-lines between the various forms. But he was not one-sided, for he also collected eggs and made biological observations, readily assisted by Mr. Hilgert.

If it is a thousand pities that Erlanger did not live to work out all his collections himself, it is sorrowful to think how much more he would have done afterwards—for he actually had in his mind further expeditions to German East Africa, to Turkestan and Thibet, and to the Polar Regions. His love for our beloved science and his energy were unbounded; but he also took interest in other matters and was very fond of shooting and other field-sports and much engrossed in his military duties as Lieutenant in the 13th Hussars. Nothing pleasanter and more instructive could an ornithologist do than to visit Erlanger in his home at Nieder-Ingelheim on the Rhine, where Charlemagne's Pfalz (castle) once stood. Whoever visited him there went away with regret that the time had flown so fast and with the impression that he had met with an ornithologist and a man!—E. H.

Comte Amédée Alléon.—The biographical memoir prepared by Dr. Paul Leverkühn, and published in the last number of 'Ornis,' enables us to say a few words upon Count Amédée Alléon, who died on the 16th of January, 1904, at his residence, Makrikeuy, near Constantinople. Jean Gerard Amédée Alléon, born at Buyak-Déré on the Bosphorus, on the 8th of October, 1838, was the son of Count Jacques Alléon, and belonged to a well-known French family long engaged in financial business in Turkey. From his earliest days Alléon exhibited great artistic talent combined with a love of Natural History. A large series of his drawings of birds is now in the Museum of H.R.H. Prince Ferdinand of Bulgaria at Sophia, where is also preserved the most extensive of several collections of the birds of European Turkey which he formed, consisting of upwards of 1000 specimens. Alléon's name is well known to all workers in European Ornithology as that of one of our best authorities on the birds of the vicinity of Constantinople and the western coasts of the Black Sea. In preparing his memoirs he was mostly associated with Jules Vian, of Belleville, near Paris, to whom he was latterly in the habit of transmitting his specimens by the Orient Express. A catalogue of the birds of the vicinity of Constantinople by Alléon and Vian will be found in the 'Bulletin of the Zoological Society of France' for 1880, and a memoir on the birds of the Dobrudsha and Bulgaria by the same authors in 'Ornis' for 1886. Alléon was also an excellent taxidermist, and published two works on this subject in 1889 and 1898. A complete list of his writings is appended to Dr. Leverkühn's biographical notice. In 1869 Mr. H. J. Elwes and the late Mr. T. E. Buckley visited Alléon at Constantinople and, as will be seen in their article on the birds of Turkey ('Ibis,' 1870, p. 60), gave a most appreciative account of the work he was then carrying on.

Captain Francis Henry Salvin, who died on the 2nd of October in his 87th year, was the son of William Thomas Salvin, of Croxdale Hall, near Durham, while the family were also owners of Burn Hall in the immediate neighbourhood. His great-nephew is now in possession of Croxdale Hall, which has descended in an unbroken line from father to son since 1392, a length of tenure hardly to be equalled in the kingdom. Salvin was educated at Ampleforth in Yorkshire, and, through his father's marriage with Maria Weston, subsequently came into possession of the Sutton Estate, near Guildford, with its well-known Elizabethan mansion of Sutton Place. An ardent lover of nature, he made the habits of the animals around him his constant study, and was well known to ornithologists not only for his trained Cormorants and their fishing abilities, but also for his writings on Falconry. In 1855 he published, in conjunction with the late W. Brodrick, of Belford in Northumberland, 'Falconry in the British Islands' (with illustrations by Joseph Wolf), of which a second edition was issued in 1873; and in 1859, associated with Mr. G. A. Freeman, 'Falconry, its History, Claims, and Practice,' with a chapter on "Fishing with Cormorants." The latter part of his life was passed in quiet country pursuits at Sutton.

Edward Neale, who for nearly twenty years had been a member of the British Ornithologists' Union, passed away, after a long and painful illness, on the 11th November last, at the age of seventy. By profession an artist, he devoted his talents more specially to the delineation of Animal Life, and painted chiefly sporting and Natural History subjects. The illustrations in the late E. Booth's 'Rough Notes on Birds, &c.' were executed by him, as were also several plates for Dresser's 'Birds of Europe.' Neale was devoted to his art, and continued his work even when seriously ill and confined to his bed, while he bore his sufferings with the greatest fortitude.

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XIII.—*An Oological Journey to Russia.*

By H. E. Dresser.

Being anxious to obtain certain further details respecting European oology, I decided to visit Finland and Russia during last spring, and to examine several of the largest egg-collections in those countries. I left Hull for Helsingfors on the 18th of May and arrived on the 23rd, having stayed for half a day at Copenhagen on the way. At Helsingfors I at once looked up my old friend Professor Palmén; but the series of eggs in the Museum there is not large and contains little of interest, though Mr. I. A. Sandman, an old correspondent of mine, has a very good collection, which I spent the best part of a day in inspecting. He has collected in various parts of Finland, and has several clutches of the eggs of *Emberiza rustica* taken in North-East Finland, besides specimens of those of *Cuculus canorus* from nests of *Saxicola œnanthe, Ruticilla phœnicurus, Fringilla montifringilla, Turdus pilaris*, and *Anthus cervinus*. After spending three days at Helsingfors I went to Tammefors to visit Dr. Hougberg, who has, perhaps, the largest oological collection in Finland. His country-house is beautifully situated on a well-wooded tongue of land jutting out into the lake, and in most of the trees he has placed nesting-boxes, which have been well tenanted; several have been occupied by *Muscicapa atricapilla*. Dr. Hougberg's collection is especially rich in eggs taken in Finland and in varieties. It contains twenty clutches of eggs of *Aquila chrysaëtus*, some of which shew exceptionally fine coloration. Amongst the varieties in the collection I noticed a clutch of eggs of *Strepsilas interpres* very richly marked on a pale grey ground, another of *Numenius phæopus*, recalling certain eggs of *Larus canus* in general character, a third of *Limosa lapponica* very slightly spotted on a pale greenish-grey ground, and two eggs of *Grus communis*, unusually darkly marked on a greenish ground.

On the 27th of May I left Dr. Hougberg's hospitable quarters to visit Mr. Schoultz, arriving at Humppela after a journey of five hours by rail. Mr. Schoultz's collection has been chiefly formed by himself in Finland, and he was, I believe, the first oologist who found the Rustic Bunting breeding in the north-east of that country. He shewed me on the map the exact localities where the bird has been met with in the breeding-season, and offered, if I could spare a fortnight, to take me to find a nest or two, but, unfortunately, I could not accept his kind proposal. In his collection I saw a clutch of four eggs of *Nucifraga caryocatactes* taken in Finland between Raumo and Nystad, a clutch of four of those of *Tringa minuta* from Utsjoki, one unspotted egg of *Colymbus arcticus* and one only slightly spotted on a greyish-blue-green ground. Besides these there were several very well-marked clutches of eggs of *Phylloscopus sibilatrix* taken in Finland, many fine varieties of those of *Falco æsalon*, one particularly dark clutch of those of *Emberiza rustica*, and several eggs of *Saxicola œnanthe* and *Muscicapa atricapilla* finely but distinctly dotted with red. In the collection were a good many eggs obtained in exchange from other parts of Europe, but none of them were of much value, and some seemed to me rather doubtful.

After spending a couple of days with Mr. Schoultz, I travelled on to Wiborg to pass a short time with my old friend Mr. W. Hackman, arriving there on the 29th of May. I found Mr. Hackman at his country-seat of Hertuala, a lovely place on the shore of the Saima Lake, where I lived when I first visited Finland as a lad in 1856. I intended to stay there at least a week, but on the following day I received a telegram from Dr. Bianchi asking me to come to St. Petersburg as soon as possible, as he was starting almost at once for a trip in the country, so I arranged to leave by the night-train on the 1st of June. At Hertuala I visited several of the places I formerly knew so well, when I spent the whole of the summer there in 1856 and collected birds and eggs. The old tree in which I then found the Great Black Woodpecker breeding was still standing, with several more holes in it, but I did not see the birds. The gardener, however, told me that they were there in the previous year, but that he had not observed them since. *Oriolus galbula* still frequents the gardens, as do many other birds I used to see when formerly in the district. On my arrival at St. Petersburg I went at once to the Museum, where I found Dr. Bianchi, who was most friendly, and afforded me every facility. He had looked out all the eggs obtained on the Taimyr Peninsula and the New Siberian Islands, so that I could examine them at my ease, and among them I was able, for the first time, to examine authentic eggs of the Knot (*Tringa canutus*), obtained by the late Dr. Walter. Dr. Walter's assistant was in St. Petersburg at the time, so Dr. Bianchi sent for him in order that I might learn further particulars from his own lips. I ascertained from him that only one clutch of three eggs of *Tringa canutus*, No. 70 (*cf.* Ibis, 1904, p. 233), obtained by Dr. Walter, was thoroughly authenticated, by the parent bird being shot on leaving the nest. These specimens agreed well with the description which I translated and gave in 'The Ibis,' as above quoted. Of the eggs of *Calidris arenaria* there were several clutches not shewing any great variation, besides several of *Tringa subarquata* obtained by Dr. Walter, all resembling those found by Mr. H. L. Popham and figured by Prof. Newton (P. Z. S. 1897, pl. li. figs. 1–4). Amongst them were several beautiful varieties.

I ascertained that Mr. H. Goebel's collection, which was offered to Prof. Newton and myself, had found a home in the Museum, and as it was said to contain two clutches of eggs of *Tringa subarquata,* which we supposed to be referable to *Tringa striata,* I examined and compared them with those obtained by Dr. Walter. One of them is, I believe, undoubtedly correct, but the other is not, and the egg more nearly resembles certain specimens of that of *Calidris arenaria.* In the Museum I also examined the following eggs:—Of the Pheasants those of *Phasianus persicus, P. strauchi, P. mongolicus, P. tarimensis, P. chrysomelas,* and *P. principalis,* all resembling those of *Phasianus colchicus,* though those of *P. tarimensis* were rather rufous in tinge, and those of *P. chrysomelas* were rather greyish. Three eggs of *Grus nigricollis* were of the usual Crane-type, though very dark, but the others were paler.

Wild-taken specimens of the eggs of *Grus leucogeranus* closely resembled those laid in the aviary at Lilford Hall, but the markings were rather more purple in tinge. Eggs of *Tetraophasis obscurus* were creamy white with pale rufous spots or nearly obsolete markings; in general appearance they resembled those of *Tetrao urogallus,* but were paler.

Eggs of *Perdix sifanica* resembled those of *Perdix cinerea,* some being greyer and others more rufous.

Eggs of *Ithaginis sinensis* from Szechuen were creamy white, with rich blackish surface-spots and blotches.

Eggs of *Ciconia boyciana* were all like those of *Ciconia alba,* but were, if anything, a trifle larger.

Eggs of *Podoces hendersoni* were pale greenish grey, finely spotted with pale rufous, and recalled some varieties of those of *Turdus viscivorus.*

Eggs of *Podoces pleskii* obtained by Mr. Zarudny were pale greenish grey, with pale dull brownish spots, generally spread over the surface, and recalled some varieties of those of *Lanius excubitor.*

Eggs of *Merula kessleri* were pale greenish grey with a bluish tinge, some darker, some paler, spotted all over the surface with small wood-brown spots; they much resembled those of *Turdus merula.*

Eggs of *Melanocorypha maxima* resembled those of *Melanocorypha calandra,* but were larger and darker.

Eggs of *Melanocorypha mongolica* collected by Prjevalski were of the *Calandra* type, and one clutch had dull woodbrown spots, almost confluent at the larger end.

Eggs of *Lusciniola armandi* were white, with pale red spots, and somewhat resembled those of certain Titmice, but the spots were paler.

Eggs of *Acrocephalus agricola* obtained by Mr. Zarudny were greenish white, closely marked with dark greenish brown.

Eggs of *Calliope tschebaieri* were very pale uniform blue, unmarked.

All the eggs of *Babax lanceolatus* were of a rich dark blue, darker in tone than those of *Accentor modularis,* and unspotted.

Eggs of *Bucanetes mongolicus* were white, with a faint bluish tinge, sparingly dotted at the larger end with black.

Eggs of *Montifringilla davidiana* were, like all the eggs of *Montifringilla* and *Leucosticte* which I have seen, pure white, and measured about 20 by 14 mm.

Only one clutch of the eggs of *Pterorhinus davidi* was in the Museum; these were pale blue, marked with small black spots and with a wreath of black scratches and wavy lines round the larger end.

Two eggs of *Trochalopterum ellioti* from Kan-su resembled the foregoing, but were much less marked.

Synthliborhamphus antiquus deposits two eggs in a hole in the ground, which, as shown by von Schrenck ('Vögel des Amur-Landes,' Taf. xvi. figs. 2, 3), are dissimilar, one being pale olive-brown sparsely spotted with underlying lilac-grey and dull brown surface-spots, the other having the ground-colour pale greyish clay or creamy, not olive-brown.

I had not time to examine any birds, and not even all the eggs that I wished to see, as Dr. Bianchi was obliged to leave St. Petersburg on the 4th of June, but he shewed me a series of skins of *Koslowia* (*Leucosticte*) *roborowskii* and *Otocorys teleschowi*, both excellent species, and also three specimens of *Emberiza koslowi* from Tibet.

I spent an evening after leaving the Museum with Mr. Alfaraki, and another with Mr. H. Goebel, and the latter shewed me a collection of eggs made in the Minsinsk District, Yenesei Government, Siberia, between the head-waters of the Yenesei and Irkutsk, which I eventually purchased, as it contained those of several species which I wanted, amongst them being clutches of *Carpodacus roseus, Uragus sibiricus, Motacilla leucopsis,* and *Emberiza aureola,* with the nests; and eggs of *Falco amurensis, Turdus obscurus, Muscicapa luteola, Anthus richardi, Gallinago megala, Gallinago solitaria, Grus monachus,* and so forth.

I spent some time also with Dr. Bianchi in the new Museum, where the arrangements are excellent. The cases, about nine feet square or more, shewing birds in their haunts, with all the surroundings carefully reproduced, are especially fine, as are also the larger cases with groups of the Urus, Wild Horse, and Wild Camel; but the gem of the collection is the huge plate-glass case containing the last-obtained specimen of the Mammoth, stuffed, with all the surroundings carefully reproduced as they were found. The skeleton is set up close by, and in another case are the stomach, intestines, &c., which have all been carefully preserved.

After calling to see some old friends in the town, I left St. Petersburg on the 4th of June for Wesenberg, in Esthonia, to visit Mr. Buturlin, the well-known Russian ornithologist and traveller, arriving there the next morning. That day and the following we spent in looking at the birds in his collection, and he then proposed that we should visit some small islands in the Gulf of Finland. We accordingly started early the next morning for Kunda, a little port, where we arrived before noon, and called on Mr. Stepanoff, the chief of the Customs, who made us very welcome and offered us his steam-launch. After an early dinner he and two other friends joined us, and we all started for the largest island, Goft, where birds are most plentiful. On our arriva we found a dozen fishermen who had been camping there for three days, and as they had evidently been living to a large extent on eggs (judging from the quantity of shells near their camp-fire), none were left, though we saw many birds. This island was about three-quarters of a mile long, rocky and sandy, with a few bushes in the middle. Here we saw a pair of Greenshanks which had evidently been nesting, but of course we found no eggs. We then went to the second and rather smaller island some distance away. This was also composed of sand and heavy stones, with grass and low bushes in many places, and here we found *Ægialitis hiaticula*, *Strepsilas interpres*, *Motacilla alba*, *Œdemia fusca*, *Sterna fluviatilis*, *Larus canus*, and *Larus cachinnans*, many of them with eggs. Altogether there are three uninhabited islands in the group, but we did not visit the third and smallest, as we returned to Kunda for supper. The next day we spent in skinning the birds and blowing the eggs that we had obtained at the Goft Islands; in the evening we returned to Wesenberg. Mr. Buturlin is not an egg-collector, but he had a small collection which had been made at the mouth of the Petchora River by a young naval officer, Mr. Novosilltzeff, out of which he kindly gave me a clutch of eggs of *Squatarola helvetica* and two eggs of *Cygnus bewicki*.

Baron Harald Loudon had invited us to spend a few days at his place in Livonia, so we left Wesenberg on the evening of the 10th of June and arrived at Wolmar early the next morning. Here we had a pleasant drive of about two hours through a pretty and well-wooded country to Lisden, the Baron's estate, in his carriage, a regular Russian equipage with four horses abreast. Baron Loudon has travelled much in Transcaspia and Central Asia, and has a very large and rich collection of Palæarctic bird-skins and one room filled with mounted birds, while there are horns in most of the sitting-rooms. The Baron has an interesting collection of photographs taken by himself on his journeys and a considerable number of curiosities of various kinds.

The weather was very fine, so we spent part of the day out of doors, where we saw *Buteo zimmermannæ*, *Coracias garrulus*, and many other more common birds; *Carpodacus erythrinus* is often seen in the garden, but we did not observe it there.

The Baron had a small egg-collection, but there was not much in it of interest to me, except a few eggs from Transcaspia, any of which, he told me, I could have. I selected several, and amongst them was one of *Gecinus flavirostris*, which I believe is the only authentic specimen known, for when Messrs. Loudon and Zarudny met with this Woodpecker all the nests contained young birds, except one, in which an addled egg was found: this was not discoloured and they were able to blow it. The next day we visited a wood about six miles distant, where we saw a nest of *Aquila pomarina*, which was not presently tenanted, though we noticed a pair of the birds. We also saw several Buzzards' nests and one of a Goshawk. When crossing a deep wide ditch in a wood a bird flew out nearly under our feet and the Baron shot it; it proved to be a female Redwing (*Turdus iliacus*). The nest was in a depression or shallow hole in the side of the ditch and contained five incubated eggs, four of which I was able to blow. The nest was at the foot of a tiny spruce sapling about a foot high.

In another wood we found a Buzzard's nest in a high pine-tree, so the keeper went and brought back a boy, who climbed the tree and found that the nest contained two young birds in down and one egg. As the Buzzards here are supposed to be *Buteo zimmermannæ*, the Baron shot one of the parents, and photographed both this nest and that of *Turdus iliacus*. The Buzzard had the upper parts as in typical *B. vulgaris*, but paler and tinged with rufous on the neck, while the under parts were rufous-buff, the throat striated and the abdomen barred; the tail was, however, not rufous, but as in typical *B. vulgaris*. I examined the series of Buzzards in Baron Loudon's collection, and must say that the so-called *B. zimmermannæ* seems to be a very doubtful and variable species.

The following day we all three drove over to Burtneck, to visit Herr von Schröder, whose place, said to be the finest in Livonia, is beautifully situated at the end of the Burtneck See, a lake about fifteen versts long by ten wide. After an early lunch we started in a large boat, with four men to row us, up the lake, to visit one or two small islands. On the way I was shewn a spot where *Haliaëtus albicilla* nests every year in an old tree. The water was high, so the islets were smaller than usual.

We met with many *Sterna fluviatilis*, though most of their eggs had been sucked by Crows, plenty of Reed-Warblers, half a dozen nests of *Podicipes cristatus* and one of *Anas boscas*. We returned to Burtneck in time to partake of a luxurious supper. The following day we drove back to Lisden.

All the next morning I worked at birds, and afterwards at luncheon we were joined by Baron Kruedener, a well-known sportsman, who remained for the rest of the day. Mr. Buturlin had to return home, but I remained at Lisden until the 17th of June, when I was obliged to go to Riga to have my passport viséd. As already stated, Baron Loudon's egg-collection was small, but his bird-collection very rich in series. I noticed that *Dendrocopus leucopterus* from Transcaspia was readily distinguishable from *D. leptorhynchus* from the Syr-Darja, but that specimens from Ferghana were intermediate. *Ciconia azareth* Severtz. seemed to be a fairly good subspecies and always had the bill larger and stouter. The series of *Turdus atrigularis* was particularly fine. One male had the breast-shield very black, the rest of the under parts pure white, and the upper parts, wings, and tail isabelline. *Athene caucasica*, *Coracias semenovi*, *Otocorys pallida*, *O. iranica*, and *O. balcanica*, all of which I examined, seem to me to be very doubtful subspecies. *Passer simplex* var. *zarudnyi* from Transcaspia did not appear to me to differ from *Passer simplex* from North Africa, but unfortunately there were no African specimens to compare it with. *Troglodytes pallidus* from Transcaspia differs from typical *Troglodytes parvulus* only in being paler, with a more slender bill, and the under parts somewhat greyer and more closely barred.

I examined a good series of Magpies, and *Pica bactriana* appears to me to be intermediate between *Pica leucoptera* and *Pica rustica*, but varies greatly in the amount of white on the quills. Specimens from Transcaspia labelled *Pica bactriana* all had the tail less glossed with green and almost uniform in colour, whereas *P. rustica* has a distinct purple band at the end of it, but Persian specimens were intermediate as regards the coloration of the tail.

Scops Owls from Transcaspia, which Baron Loudon said he was going to describe as a subspecies and to name *Scops turanica*, differed but slightly from *Scops giu* in being less grey and more rufous in coloration. A female measured: culmen 1·1 in., wing 5·9, tail 3·0, tarsus 0·5.

Athene caucasica Zarudn. & Loud. differs from *A. bactriana* in having the upper parts darker, the head more clearly spotted, and the under parts more closely and boldly striped. *Astur cenchroides* differs very slightly from *Astur brevipes* in having a slightly longer and somewhat more barred tail.

I examined and took notes on several more species and subspecies in the collection, but will not weary the readers of this article by giving my notes *in extenso*. After leaving Lisden and my hospitable host and hostess, I spent one day in seeing Riga, and then returned direct to England, *viâ* Eydtkuhnen and Berlin, having had a most enjoyable holiday.

XIV.—*On the Discovery of the Nest and Eggs of the Solitary Sandpiper* (Totanus solitarius). By the Rev. Francis C. R. Jourdain, M.A.

As little has hitherto been recorded with regard to the breeding-habits of the Solitary Sandpiper (*Totanus solitarius*), perhaps a few details of the recent discovery of its nest and eggs may be of interest to English ornithologists.

Early in the year 1903 Mr. Walter Raine, of Toronto, engaged Mr. Evan Thomson to collect for him in Northern Alberta. At the close of the season Mr. Thomson's field-notes were sent to Mr. Raine, and amongst them was a record of a clutch of Sandpiper's eggs which had been found in an old nest of *Turdus migratorius* in a tree. When the eggs arrived the first glance shewed that they were new to science. In appearance they much resembled the eggs of *Totanus ochropus,* but were considerably smaller. Writing to me on Oct. 9th, 1903, Mr. Raine stated his belief that the eggs would prove to be those of the Solitary Sandpiper, and several American oologists were of the same opinion. However, in the following year he again engaged Mr. Thomson's services, in the hope that another nest might be found and the parent bird secured. The following extract from Mr. Thomson's letter will shew that he was successful in his search :—"This season on June 9th I found another set of Solitary Sandpiper's eggs, this time in a Grackle's nest in a low tree. I blew the eggs and left them until next day, intending to return with my gun and shoot the bird, but on again visiting the nest I found the eggs gone; evidently the bird had removed them, as I saw no trace of egg-shells around. However, on the 20th of June [? 24th] I was still more fortunate, as I found another clutch and shot the parent bird as she flew from the nest, and secured the four eggs. This time the eggs were found in a Cedar-Waxwing's nest in a spruce-tree in a swamp or muskeg."

The following description of the nests and eggs is taken from Mr. Raine's paper in the 'Ottawa Naturalist,' vol. xviii. p. 135 (Oct. 20, 1904) :—

"Set I. Taken in Northern Alberta, June 16th, 1903, four eggs advanced in incubation, collector Evan Thomson. This set was found in an old nest of the American Robin, built 15 feet up in a tamarac tree that was growing in the middle of a large muskeg dotted with tamaracs. The bird was flushed off the nest, but unfortunately not secured. The eggs are exceedingly handsome and very different from the eggs of any other American Sandpiper. The ground-colour is pale greenish white, heavily blotched and spotted, chiefly at the larger ends, with vandyke-brown, chesnut-brown, and purplish grey. The average size of these four eggs is 1·36 × ·98 in.*, and they are very large for the size of the bird.

"Set II. Northern Alberta, June 9th, 1904. Four eggs found in the nest of a Bronzed Grackle, built in a low tree; these eggs were unfortunately lost. . . .

"Set III. Northern Alberta, June 24th, 1904. Four eggs found in the nest of a Cedar-Waxwing, which was built in a small spruce-tree growing in a swamp, the nest being about 5 feet from the water. Mr. Thomson was fortunate in shooting the parent bird as she flew from the nest. Thus identification is very complete, and establishes the fact once for all, that the Solitary Sandpiper does not lay its eggs in a nest on the ground like other Sandpipers, but takes possession of the nest of other birds, built in trees, just the same as its Old-World representative the Green Sandpiper is known to do. The ground-colour of this clutch is also pale greenish white, and the eggs are spotted with purplish brown, vandyke-brown, and purplish grey, and average in size 1·36 × ·99 in.† Thus it will be seen [that] they average larger than eggs of the Spotted Sandpiper, which measure about 1·34 × ·90 in. Both clutches, with the skin of the parent Solitary Sandpiper, together with the nests, are now in my possession for the inspection of ornithologists."

Mr. Raine has kindly forwarded a photograph of the two clutches side by side in the nests in which they were found. He tells me that the eggs are pyriform in shape and very handsome, excelling even those of the Yellowshank in beauty. They bear a family likeness to eggs of the Green and Wood-Sandpipers, as might be expected, but, like the birds themselves, the eggs are smaller than those of the two European species mentioned. It is interesting to note that the late Capt. Bendire, writing to Mr. Poynting, expressed his opinion that possibly, like *T. ochropus*, *T. solitarius* nested in trees, and that this might partly account for the eggs having hitherto escaped observation.

* Or, in millimetres, 34·6 × 25.

† 34·6 × 25·2 mm.

The supposed eggs of this species described by Dr. T. M. Brewer (see Capen's 'Oology of New England,' pl. xix. fig. 6) and Dr. Clark ('The Auk,' Oct. 1898, p. 328) were found in nests on the ground, and do not in the slightest degree resemble those now recorded. It certainly is a most remarkable fact that the eggs of a bird of such wide distribution on the North-American Continent as *Totanus solitarius* should have so long escaped the observation of American naturalists, and the thanks of ornithologists are due to Mr. Raine for his enterprise in making them known.

XV.—*A Trip to the Forest of Marmora, Morocco.*

By E. G. B. Meade-Waldo*.

In the spring of 1902 an opportunity occurred of visiting the Forest of Marmora, in Northern Morocco. I had wished to make this excursion many times before, as I had seen the forest when passing from Mehedia to Rabat, but it had always been considered impossible, owing to the bad character of the inhabitants. However, we made friends with a certain Sheik who had considerable influence on the borders of the forest, and he said that if we would put ourselves under his protection he would see that we were not "carried off," but that we should have to be very careful. This Moor, by name Bourzama, treated us uncommonly well, but took such care of us that we were never out of his sight or that of his dozen attendants. Moreover, although we could go where we liked in the forest to search, we could not shoot in it for fear of letting the brigands know where we were. Indeed our Sheik would not even let us sit down to eat our lunch without holding our loaded guns across our knees. But, in spite of these little difficulties, we spent several most enjoyable and interesting days in the forest. I was able to collect a certain number of insects, and had also admirable opportunities of watching the habits of the magnificent

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* For the author's previous notes on the birds of Morocco, see 'Ibis,' 1903, p. 196.

Bustard (presumably *Eupodotis arabs**) that is common throughout its extent.

Before I proceed further, however, some description of the kind of ground that we traversed may be of interest, as no European, I believe, has ever visited the district before (at least not of his own free will), and it appears to be the only large tract of woodland still left in Northern Morocco.

The Forest of Marmora lies between the Rivers Seboo and Bau-reg-reg, and is in H'mar: it is bounded on the east by the Zemmoor, on the south-east by the Zair, both these tribes being rebels against the Sultan's rule, and not acknowledging the Sultan's or, indeed, any law. In their own country they are, almost to a man, robbers and brigands. The wooded district is of considerable extent: it is about twenty-five miles in width where it comes nearest to the sea, from which it is only some dozen miles distant. Our host told us that it took about two days to get through it going eastward, and also that it widened out considerably. Our headquarters were at a tent-village called Ensár, Kabila Amar, on the edge of the forest. The country is low and undulating, not, I should say, more than from 200 to 400 feet above sea-level. The timber is continuous, closely dotted about in some parts and forming thickets in others. There are some small open spaces where there have evidently been conflagrations, for numbers of the trees shewed signs of fire. There are a few marshy tracts, but most of the ground that I went over was very dry. I saw no really fine timber anywhere, but my host told me that in some places further in there were some very fine cork-trees. The timber consisted principally of the cork-oak (*Quercus suber*), the belloot oak (*Quercus bellooti*), and a kind of wild pear-tree; the more open parts were covered with a dense growth of brooms of various kinds. This was the general appearance of the ground that I saw, but I do not think that we penetrated more than about ten miles into the forest. It was my intention to pay other visits to this new hunting-ground, and I hoped to be able to do some collecting there, but the state of the country everywhere in the north of Morocco has become so disturbed that it will probably be a long time before there is any possibility of visiting it in safety. Hence this short notice of what I *saw* in 1902. Birds were not particularly numerous; most of the country was very dry, and there was no great variety of vegetation. I was surprised not to see (or hear) a Jay. Jays may be there, and they are usually very quiet in the spring, but they are mountain-birds in Morocco, and this district may have been at too low an elevation for them. I did not see the Moorish Magpie, but I have never met with it anywhere north of Rabat. Yet the Great Spotted Cuckoo (*Coccystes glandarius*) was particularly common and very noisy, but, the time being very early in April, it was probably only passing on migration. I never actually saw any Guinea-fowl, but we heard their cries repeatedly, and were told that there were plenty of them in Zair. I have received living examples of the Guinea-fowl (*Numida meleagris*) thence, and also of the Two-spurred Francolin (*Francolinus bicalcaratus*). We heard the latter call, but could not put it up from the dense bramble-brakes. The Moorish Pied Woodpecker (*Dendrocopus mauritanicus*) was extremely common in the forest, but we did not see or hear the Green Woodpecker. The Little Bustard (*Otis tetrax*) abounded in all the open spaces on the outskirts of the forest, but we did not see or hear any in the interior. It was different, however, with a large Bustard (presumably *Eupodotis arabs*), and this splendid bird was, to me at least, the most interesting object that we met with. It was fairly common all through the forest, not frequenting, perhaps, the thickest timber, but met with everywhere else. I fancied that it rather favoured the tops of the low elevations. It was surprising how this enormous bird managed to keep out of the way, where there was so much dense covert; but it nearly always rose on the further side of a thick tree, and then, flying at a considerable height over the top of the forest, glided round the shoulder of some low hill and settled again after about a mile's flight. The birds were seen both singly and in pairs, and on one occasion I noticed five together. By far the greater number appeared to be males. I occasionally saw them walking under the tall trees, where the undergrowth was thin, when, if we approached too near for their liking, they would hurry away to an open place and rise very lightly. The flight was far lighter and more buoyant than that of *Otis tarda*. The call of this Bustard is a curious sound, like two big bubbles of a water-bottle, "*pah, pah*." On one occasion I managed to slip away and stalk a fine male that was shewing off and calling in some thistles. But very soon after I was missed —in less than five minutes—the escort came galloping all over the place looking for me, shouting and brandishing their long guns! It was hopeless to do anything under these circumstances.

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* [There can be little doubt, we think, that the large Bustard of the Marmora Forest is *Eupodotis arabs*. Mr. Drake obtained a specimen of this species at Dar-el-baida, on the west coast of Morocco ('Ibis,' 1867, p. 429), and there is an example of it in the British Museum from Mogador (*Capt. Taylor*). See also Irby's 'Ornithology of the Straits of Gibraltar,' p. 260 (1895).—Edd.]

Birds-of-Prey were fairly common in the forest, but the only sight of special interest to me was a pair of Golden Eagles (*Aquila chrysaëtus*) that had a nest in the top of a cork-tree. I was able to identify these birds with certainty, as, for Golden Eagles, they were particularly tame. I got within forty yards of both of them, and could see that they were dark-coloured and, as I thought, small in size. They were fully adult, not shewing a trace of white in the tail. The Serpent-Eagle (*Circaëtus gallicus*) was common in the forest, and I saw two pairs of Bonelli's Eagle (*Nisaëtus fasciatus*). I did *not* see the Red Kite, which is here a mountain-bird, but the Black Kite was always *en évidence*. The Bald Ibis (*Comatibis eremita*) was very numerous on the downs at the edge of the forest. It used to pass over and alight on the open spaces where there had been fires. It was breeding in numbers in the Sallee cliffs, but was much later this year than in 1901.

XVI.—*On a new Species of Tree-Partridge from the Mountains of the Malay Peninsula.* By Herbert C. Robinson, M.B.O.U., Curator of the Selangor State Museum. *With Notes by* W. R. Ogilvie-Grant.

(Plate IV.)

This very distinct and interesting species of Tree-Partridge, of which a brief diagnosis has already been published in the 'Bulletin of the British Ornithologists' Club,' is not an unexpected addition to the Peninsular fauna. It differs from all described members of the genus, except *Arboricola rubrirostris* of Sumatra, in having the crown of the head black, but from that species it is readily distinguished by the colour of the bill and by many striking differences in the plumage. Its nearest ally is undoubtedly *A. atrigularis,* which ranges from Assam southwards to Upper Burma. The type-specimen has been deposited in the National Collection. A male and female were obtained by my native collectors, who also observed, but did not secure, *Caloperdix oculea* and the recently described *Rheinhardtius ocellatus nigrescens* Rothsch., as well as a Silver-Pheasant, probably undescribed, which I myself have met with in the same district.

The new species may be fully described as follows :—

Arboricola campbelli. (Plate IV.)

Arboricola campbelli Robinson, Bull. B. O. C. xv. p. 28 (1904).

Adult male. Top of the head, nape, lores, and periocular region jet-black ; a broad white supra-loral stripe ending immediately above the eye, the feathers with black shaft-stripes ; a white stripe from the base of the lower mandible, broadening posteriorly until it reaches the ear-coverts, which are greyish black. Sides of the neck black ; a somewhat ill-defined black-and-white stripe from each side of the occiput to the nape, the bases and margins of the feathers being white. Chin and upper throat black ; feathers of the lower throat with their bases white, forming an ill-defined collar. Chest and upper abdomen dark grey ; lower abdomen paler, whitish in the middle with a brownish tinge ; flank-feathers greyish, shading into olive-brown near the extremity, with a subterminal rufous-buff shaft-spot and a terminal black band; concealed patch of downy feathers under the wing grey. Feathers of the thighs greyish olive, obscurely barred with orange-buff and tipped with black; under tail-coverts with their bases black, their tips greyish olive; mantle, back, and upper tail-coverts golden olive-brown, each feather with three narrow bars of black; tail-feathers above blackish, vermiculated with olive-brown, beneath greyish olive. Primaries brownish black; outer primary-coverts and secondaries black, their outer webs broadly margined with chestnut; remaining wing-coverts greyish olive, their concealed portions black. Tertiaries and scapularies greyish olive, with a broad oblique subterminal bar of black and a terminal one of chestnut. Quill-lining greyish, the inner wing-coverts whitish, grey at the base, the outer series sooty black; axillaries greyish white. Iris brown; bill black; gular and orbital skin brick-red; tarsi and claws bright sealing-wax red. Total length 216 mm., wing 143, tail 61, tarsus 43, culmen 21.

Adult female. Similar to the male. Total length 223 mm., wing 137, tail 61, tarsus 41, culmen 19.

Habitat. Telôm Valley (3500′–4500′), borders of Perak and Pahang, Malay Peninsula.

Since the publication of the twenty-second volume of the 'Catalogue of Birds' in 1893 several new species of Tree-Partridge have been described, and Mr. W. R. Ogilvie-Grant has kindly supplied me with the following amended key to the known species of *Arboricola* including *Tropicoperdix*:—

A. Concealed patch of downy feathers under the wing grey. (ARBORICOLA.)
  a. Feathers of the sides and flanks grey or grey edged with chestnut, usually with a white spot or shaft-stripe on each.
    a′. Upper back olive-brown, barred and fringed with black.
      a″. Top of the head bright chestnut; chin and throat black, in some specimens each feather narrowly margined with white .... *torqueola*, ♂.

b″. Top of the head brownish or olive-brown, each feather tipped with black.

a‴. Chin, throat, and front of neck rufous, the two latter spotted all over with black, or sometimes on the sides only .... *torqueola*, ♀.

b‴. Chin and throat black; front of neck black, each feather edged with white .... *atrigularis*, ♂ ♀.

c‴. Chin and throat black; front of neck orange-scarlet .... *ardens*, ♂ ♀.

d‴. Chin, upper part of throat, and front of neck white; lower part of throat black .... *crudigularis*, ♂ ♀.

b′. Upper back uniform olive-brown, not barred with black; some of the feathers sometimes slightly fringed with black at their extremities.

c″. Chest grey; top of the head olive-brown, each feather edged with blackish brown.

e‴. Front of the neck bright rufous.

a^4. Chin and throat black .... *intermedia*, ♂ ♀.

b^4. Chin and throat rufous, thickly spotted with black .... *rufogularis*, ♂ ♀.

f‴. Front of neck black, separated from the breast by a narrower white and a wider dark chestnut band.

c^4. Forehead dark, like the crown .. *gingica*.

d^4. Forehead white................. *ricketti*, ♂ ♀.

d″. Chest and top of head chestnut; chin and throat bright rufous; front of neck white, divided from the chest by a narrow black band .... *mandellii*, ♂ ♀.

b. Feathers of the sides and flanks grey, shading into olive-brown near the extremity, with a subterminal rufous-buff spot and a black terminal band .... *campbelli*, ♂ ♀.

c. Feathers of the sides and flanks uniform chestnut .... *javanica*, ♂ ♀.

d. Feathers of the sides and flanks black with narrow wide-set white bars............ *rubrirostris*, ♂ ♀.

e. Feathers of the sides and flanks each with a large subterminal white spot partially or wholly bordered with black.

c′. Chest brownish red, brownish ochre, or olive-brown; scapulars chestnut at the extremity.

e″. Wide superciliary stripe pale buff, extending down the sides of the neck. . *brunneipectus*, ♂ ♀.

f″. Superciliary stripe absent .... *henrici*, ♂ ♀.

d′. Chest bright rust-red or reddish chestnut; scapulars olive-brown at the extremity.

g″. Superciliary stripe grey .... *hyperythra*.

h″. Superciliary stripe rust-red.......... *erythrophrys*, ♂ ♀.

f. Feathers of the sides and flanks greyish, widely barred with white and black at the extremity.

e′. Feathers of the back dark earthy-brown faintly margined with blackish ...... *orientalis*.

f′. Feathers of the back golden-brown fringed and barred with black .... *sumatrana*.

B. Concealed patch of downy feathers under the wing snow-white. (TROPICOPERDIX.)

g. Sides and flanks marked and mottled with black and buff; chest olive-brown with wavy bars of black .... *chloropus*, ♂ ♀.

h. Sides and flanks barred with black and buff; upper half of chest chestnut .... *charltoni*, ♂ ♀.

Mr. Ogilvie-Grant has also furnished me with the following remarks upon two of the recently discovered species:—

(1) ARBORICOLA RICKETTI.

Arboricola ricketti Grant, Bull. B. O. C. viii. p. xlviii (1899).

Thanks to the generosity of Mr. C. B. Rickett, there is now a series of this fine species in the National Collection. All of the examples have the white forehead and superciliary stripe well developed, and in this respect differ from the nearly allied *A. gingica* Temm., the type of which is preserved in the Leyden Museum.

Hab. Foh-kien, China.

(2) ARBORICOLA HENRICI.

Arboricola henrici Oustalet, Bull. Mus. Paris, ii. p. 317 (1896); id. Arch. Mus. Paris, (4) i. pl. ix. (1899).

This species appears to be closely allied to *A. brunneipectus*

Tick. In describing the type M. Oustalet compares it with *A. torqueola*, but it evidently belongs to quite a different section of the genus, having the feathers of the sides and flanks ornamented with a large subterminal white spot and terminal black band, as in *A. brunneipectus.* From the latter species it appears to differ only in having the forehead chestnut instead of whitish buff and in lacking the pale buff superciliary stripes. In the description the wings are said to resemble those of *A. torqueola*, but the figure (*op. cit.*) represents the wing-coverts as being pale blue tipped with chestnut and with a subterminal black spot. If the figure correctly represents the colouring of this bird's wing, it is unlike that of any other member of the genus.

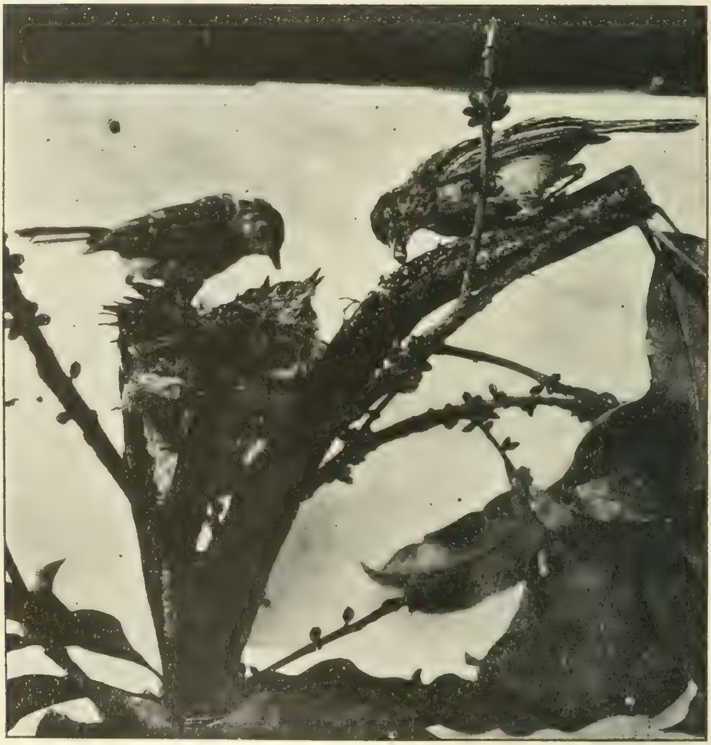
Hab. Tonkin and Anam.

XVII.—*On* Myiopatis semifusca, *a small Neotropical Tyrant-bird, harmful to Tree-culture as a Disseminator of the parasitic Loranthaceæ.* By Prof. Dr. Emil A. Goeldi, H.M.B.O.U., C.M.Z.S., Director of the Pará Museum.

Our acquaintance with the Neotropical Avifauna does not up to the present go far beyond catalogues and descriptions of bird-skins, and, as to its most important features, still remains unquestionably in the "cabinet phase." It is well to remember that the systematic naming and diagnosis of a species is merely the threshold at the entrance to the essential knowledge of its life-sphere—a small fraction only of the sum total of the natural history of the species. The truth of this assertion especially impresses him who calls to mind the family of the Tyrants, which plays so prominent a *rôle* in the physiognomy of the South-American Avifauna—a family to the complexity and richness of which I have already more than once alluded in previous publications. These facts have been, moreover, frequently pointed out by nearly all special investigators of South-American ornithology. What light has been thrown upon the life-history of this host of Tyrants (large, middle-sized, and small—

all the specimens adorned with fine-sounding scientific titles) either in ornithological literature or on the shelves of museums? The most elementary honesty would compel us to make the confession: "Little or nothing."

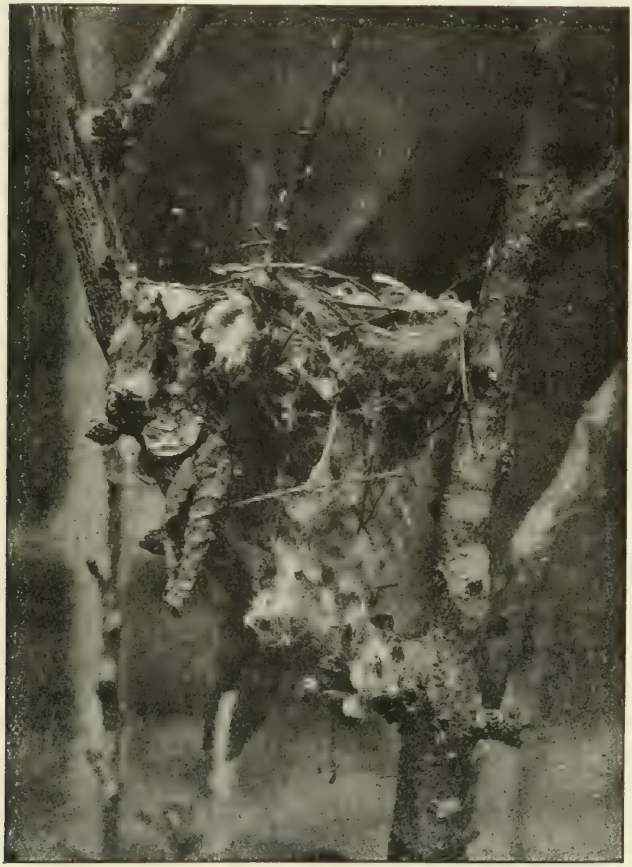
Text-fig. 12.



Myiopatis semifusca.—The parent birds are feeding their half-fledged nestlings with the berries of *Loranthus.* Note the seeds sticking everywhere in abundance to the twigs around the nest. One of the birds is in the act of ejecting a seed and wiping it on the branch. (About half the natural size.)

Under these circumstances even the slightest contribution to the life-history of the Tyrant-birds, when based on actual and accurate observation, becomes of special value. I am now able to give an account of the feeding-habits of *Myiopatis* *semifusca* *—a small Tyrant very common and characteristic of the ordinary avifauna of the gardens and orchards of the city of Pará. Its notes, phonetically represented by "tiü-tiü-tiü," rapidly repeated three times, with a most surprising energy and loudness, are a harbinger of the dawn

Text-fig. 13.



Nest of *Myiopatis semifusca*, built in the fork of a low pear-tree, and composed of wool, down-feathers, dry twigs, and leaves. (Side view, about half the natural size.)

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* *Myiopatis semifusca* (Scl.); Cat. B. B. M. xiv. p. 123.

(mingled, of course, with the voices of other birds, such as *Troglodytes furvus* and *Myiarchus ferox*), and come from the high tree-tops and bushes. The same notes are frequently heard all through the day until nightfall. *Myiopatis semifusca* is a bird of restless, mercurial temperament and impetuous in all its movements.

The common statement in ornithological literature as to the food of the family of Tyrants is that it consists principally of insects and other animal substances. Certainly the scientific name chosen for the family is not against this prevailing idea. The usual opinion concerning the character and disposition of its members corresponds closely with that known of the nature of the Old-World family of Laniidæ, or Shrikes. So far as my knowledge of the literature of Neotropical ornithology goes, there is no evidence against such an opinion. For this reason what I have now to relate will be of so much the more interest.

In the beginning of December, 1903, I was informed by my cousin, Andreas Goeldi, that in the fork of a small pear-tree in the experimental department of the Botanical Garden there was a nest of this little Tyrant containing two half-fledged nestlings (see text-figs. 12 & 13, pp. 170, 171). At the same time he stated that his previous observations, made in the Serra dos Orgãos Mountains, in Southern Brazil, on an allied species of small Tyrant, were now being confirmed as to the food of the young, which consisted of the berries of parasitical Loranthaceæ. We proceeded together to the spot to verify the facts, and we soon found abundant evidence of the correctness of this statement in the innumerable berries of *Loranthus* glued on all the neighbouring branches and twigs within a radius of some metres.

Close observation confirmed the fact that the parent birds in their incessant visits to their young were the bearers and planters of the berries. They bring in their beaks and crops the small, whitish, round berries of the "herva de passarinho"* from the neighbouring fruit-trees, where this parasite grows in abundance. As the nutritious part of the fruit is the mucilaginous pulp, while the seeds are only a dead weight, the birds seek to rid themselves of the latter by wiping the sticky kernels off their beaks on the nearest twigs and branches, which after a time become thickly studded with these objects. The pulp, physiologically manipulated and previously prepared in the parental crop, constitutes the food furnished by the parents to the nestlings.

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* According to kind information furnished by Dr. T. Huber, chief of the Botanical Department of our Museum, the most common species of

This result was further corroborated by the following experimental observation:—When the two nestlings were almost full-fledged they were taken from the nest (which, by the way, was placed so near the ground and in such an exposed situation that it was liable to be destroyed at any moment) and put into a cage, which was hung in the shade on a branch of a neighbouring tree. The roomy cage was made of narrow splints of the leaf-stems of the Mirity-palm, the usual material for a bird-cage locally, and contained nothing but a perch. After a very short interval the parent birds found and recognised their little ones, as we had hoped, and continued to feed them as before, through the narrow openings of the cage. It was not many days before both the splints on the floor of the cage and still more the perch were thickly bespread with the sticky seeds of the "herva de passarinho," which in some places formed hanging clusters in all stages of incipient germination. In the same way as in the germination of the Old-World mistletoe, the first phase in the Loranthaceæ is the sending out of a pedicle from the basal point of the kernel with an adhesive terminal disc, representing morphologically the first root, destined to penetrate the tissues of the branch

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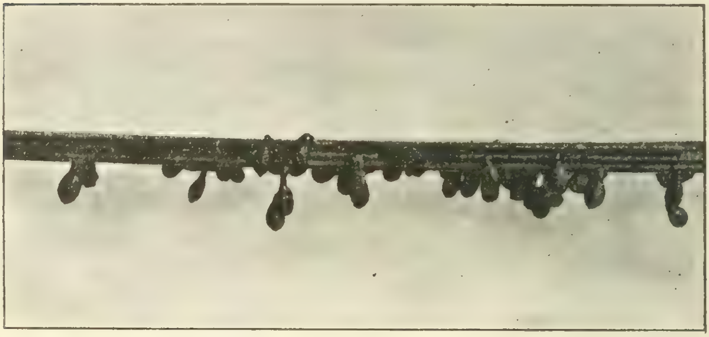
Loranthaceæ (interesting on account of the trouble and damage they cause to arboriculture near Pará) are *Phthirusa pyrifolia* Eichler (principally infesting species of the genus *Citrus*, such as lemon-, lime-, and orange-trees), *Phthirusa theobromæ* Eichler (persecuting more especially the mango-tree, *Mangifera indica*), and *Oryctanthus ruficaulis* Eichler (found preferably on the Sapotille-tree, *Achras sapota*). These kinds of "herva de passarinho" much resemble each other, but on close observation differences may be noted.

of the host-tree. The second phase consists of the shedding of the seed-shell and the opening of the two cotyledons. The accompanying photograph of a part of the perch (text-fig. 14) will indicate these phenomena better than any verbal description.

Text-fig. 14.



A portion of the perch from the cage in which the young birds, nearly fully fledged, were confined for close observation of the food furnished by the parents. Notice the numerous seeds adhering to and hanging from the perch, wiped off the beaks of the young birds, some of which are already in the incipient stages of germination. (Natural size.)

From this it will be clearly seen that our small species of Tyrant is a vegetarian to a high degree, at least during the nesting-period, and that the principal part of its subsistence at this season consists of the ripe berries of the parasitical Loranthaceæ. I must not fail to notice the fact that previous personal observations in various parts of Brazil have demonstrated the fondness of some other small birds for the same berries; for example, in the Organ Mountains every year we could see flocks of the magnificently coloured *Procnias tersa* busy in the berry-harvest among the tufts of this Neotropical mistletoe. This, however, will cause no surprise, when we recollect that *Procnias* belongs to the family of the Cotingidæ, in which berries form a normal part of the natural food. This is also the case, as my personal observation enables me to affirm, with *Coracina scutata*, *Chasmorhynchus nudicollis*, *Tijuca nigra*, *Phœnicocercus carnifex*, *Xipholena lamellipennis*, *Iodopleura isabellæ*, and *Tityra cayana*.

Of not less interest, however, is the fact that certain other small species of the Tyrant-family play exactly the same *rôle* in Southern Brazil as *Myiopatis semifusca* does here in Pará. I have before me an unedited article written in Portuguese by my cousin Andreas Goeldi in November 1900, in which he treats in detail of the propagation of "herva de passarinho" by means of very small birds, popularly called "Caga-sébos" *. The following is a translation from the article in question:—"All farmers and other owners of fruit-trees are well acquainted with the accursed tree-parasite called 'herva de passarinho.' The destruction of this parasite requires unremitting vigilance everywhere. However, not everybody knows just how certain birds plant and scatter the seeds.

"I had always supposed that the birds ate the fruit of the parasite and scattered the undigested seeds about in their excrements on the branches on which they perched. But some interesting observations which I had recently occasion to make have changed my opinion. Early one morning my attention was attracted to a small flock of five or six little birds hopping about our orchard upon some small fruit-trees. I noticed that on the different branches which I had recently cut, and on which I knew there were no seeds or young plants of the 'herva de passarinho' before, the quantity of seeds glued was constantly increasing day by day. The branches were already well covered with them, some still fresh and recently deposited and others in all stages of germination. On carefully watching the branches and the small birds perched on them, I noticed certain peculiar movements which further attracted my attention. I saw that one of them vomited up something that looked like a seed of 'herva de passarinho.' Continuing my observations, I made the following discoveries:—The bird in question was *Serpophaga subcristata*, one of the family of Tyrants, commonly called ‘Caga-sébo.’ The birds hopped from branch to branch, and sometimes to the ground, and it seemed to me that, as is usual with other Tyrants, they were catching insects, which were abundant in that place. Perched again on one of the branches, they made a peculiar movement, as if something in their alimentary canal was giving them trouble. In a short time there was expelled from their beak a seed of the ‘herva de passarinho.’ The seed, owing to the viscous matter with which it is covered, was very difficult to remove from their beaks, so that the birds were obliged to wipe them repeatedly on both sides of the branch, to which the ejected seed immediately became glued fast. It was sometimes troublesome for the bird to get rid of the seed, because the viscous matter formed strings so long and so sticky that it was obliged to raise its head as high as possible. At other times it seemed to me that in order to gain its end it became necessary to fly away to another perch to break the troublesome string of seeds. Very few of the seeds, I observed, fell to the ground, nearly all remaining stuck fast to the branches.

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* This is the popular term there used for *Certhiola chloropyga*, and also for *Phyllomyias burmeisteri* and *Serpophaga subcristata*.

“The observation proved to me that the ‘herva de passarinho’ is not disseminated by means of excrement, but rather in consequence of the seeds being indigestible, at least for these particular birds. For this latter reason, as well as on account of the great volume of the seeds in comparison with the size of the intestines, the birds vomit them up and glue them to the twigs, branches, and wires, in short to anything convenient for the purpose.

“Near the place where I made these observations there were several well-grown clusters of bamboos, full of ‘herva de passarinho,’ with abundance of ripe berries. Every day these ‘Caga-sébos’ were to be seen banqueting there. Moreover, in this operation of vomiting and planting the seeds of the parasite, I was always able to observe them early in the morning. During the rest of the day this is somewhat more difficult, as the birds probably retire to shady thickets and there busy themselves in eating the berries and in ejecting and planting the indigestible seeds. Consequently the only part of the fruit utilized is the pulp. I have shot several of these small birds and examined the contents of their crops, and have found nothing else but the pulp and seeds of the berries of the 'herva de passarinho.' It might be supposed that as soon as the fruit is taken in the beak they separate the pulp from the seed and expel the latter. Such, however, is not the case: in all the specimens which I examined I found the crop full of seeds and none in the beak.

"It seems strange to me that this small Tyrant should be one of the most assiduous planters of the 'herva de passarinho.' I should have expected, from the form of its beak, to find that it was insectivorous rather than frugivorous.

"I have never yet seen any other birds get rid of the seeds of 'herva de passarinho' in this manner. It is probable that larger birds, such as Thrushes, Pigeons, &c., digest the seeds, or at least do not reject them from the crop. It is therefore not likely that they are planters of the berries in this way. For this reason we may consider the 'Caga-sébo,' and perhaps others of the same tribe and size, if not the only at least the most active propagators of the 'herva de passarinho.'

"To rid themselves of the seeds, the 'Caga-sébos' make no selection of places. Wherever they may be perched and feel the need of ejecting the seeds, there they wipe their beaks and the seed sticks fast. Even our electric-lighting wires, at the time when these berries are ripe, are constantly covered with fresh and sprouting seeds. In the same way also the wires which serve as a support to the branches of the grapevines, as well as the branches themselves, and the branches and the twigs of the trees and bushes, are covered every year with these seeds. Wherever favorable conditions are found, which seems to be on living branches and twigs of plants and trees, these seeds germinate and develop normally if they are not immediately destroyed, while on the wires and dry sticks they soon die on account of the lack of the proper substratum in which to take root.

"The manner in which the *Loranthi* are disseminated is an interesting topic. Just as the seeds of certain plants are furnished with wings, down, hooks, and other similar contrivances as means of dissemination, so this parasite enjoys the same advantage in its viscous involucre when scattered by the small bird in question. On examining the position of the freshly deposited seeds on the twigs it is always to be noticed that, without exception, the germinal end of the seed, that is, where the primitive root is to appear, is placed next to the bark. I have not yet ascertained whether this position of the seeds is due merely to gravitation, which makes the heavier end turn downwards, or whether it is because the viscous pulp exists only on the germinal end.

"Should we consider the 'Caga-sébo' as a useful or as a harmful bird? This question is not yet fully settled. From the facts given above alone we should come to the conclusion that we should classify it as a harmful bird, as the damage and annoyance caused by the parasite are well known to everybody.

"At the present time of writing (end of October and beginning of November 1900), the 'herva de passarinho' is in blossom, and not a single specimen with fruit is to be met with. The above-mentioned observations were made by me in July and August. The temporary disappearance of the 'Caga-sébo' from its accustomed haunts coincides exactly with the end of the supply of the berries of the *Loranthi*. Supposing that, in default of berries, they might feed on insects, I searched for several days for some specimens in order to examine the contents of their stomachs to throw light on the problem. I was much surprised not to find a single specimen after four days' search in localities where in the 'berry-time' I was sure to meet with them in flocks. Where had they gone to? Perhaps not being inclined to feed exclusively on insects they had left the bamboos and other groups of trees and bushes infested with the 'herva de passarinho' in order to look for other fruit-bearing plants in the forest during the interval before the ripening of their favourite food. Up to the present time I suspend my judgment as to whether the 'Caga-sébo' is predominantly harmful. It is still possible that it is periodically busy in the destruction of noxious insects. Further examination and observation in this direction, therefore, are desirable, and I hope soon to be able to furnish some supplementary data on this subject."

XVIII.—*Notes on a small Collection of Birds from Algeria.*

By Harry F. Witherby.

So much has been published both in Germany and in this country on the birds of Morocco, Algeria, and Tunis that I shall make my remarks in this paper as brief as possible, and shall include in the list which follows only those species of which specimens were actually obtained. The collection was made by my wife and myself in Algeria in March, April, and May 1904.

We stayed from March 7th to 16th at Biskra, the well-known oasis. Its predominant feature is the date-palm, but here and there are gardens with acacias, mimosas, and other trees and shrubs, while there is some land with corn. A very short time suffices to get out of the oasis, however, either into the flat desert or into rocky and barren hills.

On March 16th we journeyed north and collected until April 7th at Hammam Meskoutine, in the hills near Constantine. A good deal of the land there is cultivated, but most of the surrounding hills are covered with wild olive-trees or thickly overgrown with various shrubs, while here and there are dense thickets and wild and thickly wooded glens.

From April 14th to May 6th we were at Hammam R'Hira, a few miles west of Algiers, where the chief attraction is a large pine-forest, which, unlike most pine-woods, is so thick with undergrowth as to be in some parts almost impenetrable.

From May 8th–23rd we collected near Les Glacières, a small hotel in the Little Atlas Mountains not far from

Algiers. There, at altitudes of from 5000 to 6200 feet, the mountains are covered with a magnificent cedar-forest.

It will be realized from these brief descriptions of the places in which we worked that the birds of each district were very different. A few species were, of course, common to all the localities, but each place contained some which we saw nowhere else.

Algeria is easily accessible, and the travelling, though slow, is easy, so that I can thoroughly recommend the country to any ornithologist who desires an interesting holiday. As attractions, he will find many extremely interesting geographical forms of our British birds, besides many kinds rare here but common there.

The study of the geographical forms of birds has advanced at such a pace in recent years that one begins to hope that enough material will soon be accumulated for some ornithologist to take a wider view of the subject than that of the systematist. Will not Dr. Hartert's work, for instance, afford a sufficiently complete and ordered statement of the geographical forms existing in the Palæarctic region to form a basis for studying many general questions regarding geographical variation?

TURDUS VISCIVORUS L.

Turdus viscivorus deichleri Erlanger, Ornith. Monatsb. 1897, p. 192.

Turdus viscivorus L.; Erlanger, J. f. O. 1898, p. 248.

♂ ad., May 16; ♀ ad., May 20; ♂ juv., May 19. Les Glacières, Little Atlas.

The resident Mistletoe-Thrush in Algeria is, at all events in summer, a very pale-coloured bird. For this reason the late Freiherr von Erlanger separated it under the name of *T. v. deichleri*, but afterwards, having examined freshly moulted birds, he concluded that the pale coloration was due to bleaching. I have not had an opportunity of examining freshly moulted skins, but certainly the adult specimens which I obtained in Algeria in summer are extremely pale on the upper side, and have only a slight tinge of buff on the breast and flanks. This may be due to bleaching, but, if so, it seems to me remarkable that the Mistletoe-Thrush should become thus bleached while other birds from the region of the Little Atlas do not seem to be affected in the same way. At a considerable distance the paleness of this form is very noticeable.

The Mistletoe-Thrush was fairly common, but exceedingly wild and difficult to approach, in the cedar-forest on the Little Atlas. We did not notice it below 5000 feet, but it was seen up to the highest altitude, over 6000 feet. On May 6th I found two empty nests, from which, I think, young had flown, and another containing three addled eggs. On May 19th we found fledged young, and on May 20th a nest containing three young about a week old and one that had died.

TURDUS MERULA ALGIRUS.

Merula algira Madarász, Ann. Mus. Nat. Hung. i. 1903, p. 559.

♀, March 19; ♂, March 25; ♂, March 30. H. Meskoutine.

The Algerian Blackbird is distinguishable from the Morocco bird (*T. m. mauritanicus* Hartert, Nov. Zool. vol. ix. p. 323). The male of *T. m. algirus* has a smaller wing, viz. 120–124 mm., compared with 126–130 mm. The female is also smaller than that of *T. m. mauritanicus*, while its throat and upper breast are paler, and the light and dark markings are more in contrast than in that species. In the female also the dark markings of the centre of the feathers are pronounced down to the middle of the breast, whereas in *T. m. mauritanicus* they are only noticeable on the throat and lower throat.

As compared with typical Blackbirds from Europe the males of *T. m. algirus* are shorter in the wing, while the females are markedly different, being in general colour dark slaty grey on the under side instead of reddish brown.

In his original description of *T. m. algirus*, Herr Madarász contrasted the male with that of *T. m. cabreræ*. One of the distinctions used was the size of the first primary, which in *T. m. algirus* he stated was longer than the primary-coverts, while in *T. m. cabreræ* it was equal and in typical *T. merula* shorter. I find the length of the first primary variable. The female of the Algerian bird was unknown to Herr Madarász at the time that he described the male.

Blackbirds were well distributed but not common in the north of Algeria. They were very shy and much more silent than our home birds. The alarm-note was not so frequently uttered, and was even harsher than that of the English species. The song was shorter, more broken, and not so sweet. A nest with eggs was found in a bush at an altitude of about 6000 feet in the Little Atlas on May 18th.

SAXICOLA LUGENS HALOPHILA.

Erlanger, J. f. O. 1899, p. 231; Whitaker, Bull. B. O. C. xiii. p. 15.

♂ ad., ♀ ad., ♂ ad. Biskra, March 10.

The interesting distinction between the female of this western form and that of typical *S. lugens* has been clearly pointed out both by the late Freiherr von Erlanger and by Mr. Whitaker, but I have been unable to compare females of typical *S. lugens*. The male of typical *S. lugens* has rusty under tail-coverts, while in *S. halophila* they are white or nearly white, but otherwise the males of the two species are alike. We found this bird at Biskra only, where it was fairly common on the edge of the desert. Unlike most Wheatears, it was decidedly tame. Mr. Whitaker ('Ibis,' 1895, p. 94) writes of it as shy and retiring.

SAXICOLA DESERTI Temm.

♂ ad. Biskra, March 11.

This specimen is decidedly small, the wing measuring only 3·5 inches. The buff tips to the feathers below the nape are worn, so that the black of the basal half of the feathers is shown to such an extent as to form an indistinct nuchal band.

This species we found only near Biskra, and not commonly.

Saxicola albicollis caterinæ.

♂ ad. H. R'Hira, April 26.

One of the characters distinguishing this bird from its eastern representative (*S. albicollis* (Vieill.)) given by Mr. Whitaker ('Ibis,' 1898, p. 624) seems to be variable. I refer to the scapulars, which are not always cream-coloured, there being often much black in them. In my specimen, for example, the scapulars are rather more black than cream-coloured.

This Wheatear was common and breeding near Hammam R'Hira

Saxicola leucura (Gmel.).

♀ ad. Biskra, March 13.

This wild and conspicuous Wheatear was common on the rocky hills near Biskra. When I first heard it singing I searched everywhere for a Rock-Thrush, which I certainly thought to be the performer. On March 13th we found a pair building in a crevice of a rock, and it was remarkable that the low wall of loose stones in front of the entrance had been built first, before the nest was made. We saw the birds in the act of carrying dry grass for the nest, and a few pieces were already in the hole. The "wall" was some two and a half inches high and very loosely made, and it looked a difficult task for the birds to carry all the nesting-material over it.

Pratincola rubicola (L.).

♂ ad. H. R'Hira, May 2.

The Stonechat was fairly common at H. Meskoutine and near H. R'Hira. A pair had fledged young at the beginning of April.

Pratincola moussieri (Olph-Galliard).

♂ ad., ♂ ad., ♂ ad. Les Glacières, May 12 & 16.

It seemed rather strange to find this bird at Biskra in the desert region and also in the Little Atlas up to an altitude of 6000 feet, but probably it does not breed so far south as Biskra. Judging by its habits only, I should class it as an undoubted Chat.

Ruticilla phœnicurus (L.).

♂ ad. H. Meskoutine, March 26.

♂ ad. H. R'Hira, April 17.

Redstarts were fairly common. A nest contained five eggs near H. Meskoutine on April 3rd.

Cyanecula suecica (L.).

♀ ad. H. Meskoutine, April 4.

A female was the only specimen secured, and I presume that it belongs to the red-spotted form of the Bluethroat, a male of which I saw at Biskra.

Erithacus rubecula (L.).

No. 50. ♂ ad. H. Meskoutine, March 27.

♀ ad., ♂ ad. H. R'Hira, April 15 & 27.

♂ ad., ♂ ad. Les Glacières, May 9 & 14.

No. 50 is distinctly different from the other specimens. It has a considerably shorter wing and a shorter and thicker bill. It seems to agree, in fact, with the English Robin (*E. r. melophilus*).

That it should be different from the other specimens is not remarkable, because at the time that I shot it I thought it must be a migrating bird by its habits. It was also extremely fat. The other four specimens were undoubtedly resident and breeding in the country. They are puzzling, and an examination of a series of the resident Algerian Robin may lead to its separation as a geographical race. My specimens are richly coloured on the breast and dark on the back, like the English bird, and unlike the typical Robin, but they have short wings (measuring in the males 690–700 mm.) and longer and finer beaks.

Robins were common in the Atlas region, especially in thick woods. They were rather wild and skulking in their habits. A nest in a niche of a cedar-trunk at an altitude of 5500 feet was nearly finished on May 20th. They appear to be late breeders in Algeria, for I saw no young.

Sylvia cinerea Bechst.

♂ ad. H. Meskoutine, April 4.

I did not notice the Whitethroat before April 4, but after that date it was common at H. Meskoutine and also at H. R'Hira.

Mr. J. H. Gurney, Jun., has recorded its arrival in Algeria on April 1st ('Ibis,' 1871, p. 300).

SYLVIA MELANOCEPHALA (Gmel.).

♂ ad., ♀ ad. Biskra, March 8 & 15.

The Sardinian Warbler was common in the districts that we visited, and was evidently nesting at Hammam R'Hira and at Les Glacières towards the end of April and beginning of May. The cock bird is very fussy and worries the observer with his incessant clamour.

SYLVIA ATRICAPILLA (L.).

♀ ad. H. Meskoutine, March 24.

The Blackcap was very common and in full song at H. Meskoutine and H. R'Hira.

SYLVIA SUBALPINA Bonelli.

♂ ad. Les Glacières, May 22.

The colour of the breast of the Subalpine Warbler varies considerably. Much of this is due, no doubt, to seasonal change, and some, perhaps, to individuality. But I am inclined to think that specimens from Africa will be found on examination of a good series to be heavily coloured with chestnut on the under side, while birds from Europe will be found to be more lightly coloured with pink.

A few pairs of Subalpine Warblers were evidently breeding in the scrub on the hill-sides about Les Glacières and H. R'Hira.

SYLVIA DESERTICOLA Tristr.

♀ ad. Biskra, March 11.

There were a few Tristram's Warblers at Biskra, but we saw the birds nowhere else. They did not appear to be breeding at Biskra up to the middle of March. Amongst other distinctions the wing-formula of this species is very different from that of *S. subalpina*.

MELIZOPHILUS SARDUS (Marm.).

♂ ad. Biskra, March 8.

There were a few Marmora's Warblers at Biskra amongst the bushes in the dry river-bed, but I did not see the bird elsewhere in Algeria.

Melizophilus undatus (Bodd.).

♂ ad., ♀ ad. H. R'Hira, April 20 & 21.

The Dartford Warbler was a very common breeding-bird at H. R'Hira. The female shot had an egg in the oviduct.

Regulus ignicapillus (Brehm).

♂ ad., ♀ ad., ♂ ad., ♂ ad. Les Glacières, May 9, 10, 11, & 18.

Firecrests were common and breeding at the beginning of May in the cedar-forest on the Little Atlas at all altitudes.

Phylloscopus trochilus (L.).

♂ ad. H. R'Hira, May 1.

Judging by its organs, the Willow-Warbler was breeding at H. R'Hira.

Phylloscopus rufus (Bechst.).

♀ ad., ♂ ad., ♂ ad. H. Meskoutine, April 1, 2, & 5.

The Chiffchaff was common, and a nest with two eggs which I found at H. R'Hira on May 5th evidently belonged to this species.

Phylloscopus sibilatrix (Bechst.).

Phylloscopus sibilatrix flavescens Erlanger, J. f. O. 1899, p. 254.

♂ ad., ♂ ad. H. R'Hira, April 18 & 23.

♀ ad. Les Glacières, May 13.

I can find no constant difference in skins of Wood-Warblers from Algeria and elsewhere. The figure given by the late von Erlanger (J. f. O. 1899, Taf. v.) of the European Wood-Warbler is, I think, from a faded example, and many specimens from various parts of Europe will be found to agree perfectly with his figure of the Algerian bird. It is remarkable that there should be no difference in the Algerian breeding-bird, because its song is markedly different from that of the Wood-Warbler which breeds in England. It is unsatisfactory to attempt to describe the song, but the last notes to which we are accustomed in

England seem to be entirely wanting, and I never heard in Algeria the beautiful song of the English Wood-Warbler.

PHYLLOSCOPUS BONELLII (Vieill.).

♂ ad. Les Glacières, May 18.

Compared with the Wood-Warbler, Bonelli's Warbler was scarce, and was first heard and seen at H. R'Hira towards the end of April, when it was evidently commencing to breed. It was also found in the open parts of the cedar-forest round Les Glacières up to the highest point (over 6000 feet). The note and song of this charming Warbler are very clear and can be recognised at a considerable distance. Compared with other *Phylloscopi*, the bird is wild, and it usually frequents the higher portions of the trees.

HYPOLAIS POLYGLOTTA (Vieill.).

♂ ad. H. R'Hira, May 5.

♂ ad. Les Glacières, May 12.

After the beginning of May the Melodious Warbler became very common at H. R'Hira. Its chattering song was to be heard from every thick mass of bushes. At Les Glacières it was also common amongst the scrub. It was undoubtedly breeding, but I did not actually find a nest.

ACROCEPHALUS PHRAGMITIS (Bechst.).

♂ ad., ♀ ad. H. Meskoutine, March 19 & 28.

The Sedge-Warbler was fairly common at H. Meskoutine, but there were no signs of its breeding. There were one or two birds at H. R'Hira at the end of April, but they did not seem to be nesting.

CETTIA SERICEA (Temm.).

♂ ad. H. Meskoutine, March 26.

Cetti's Warbler was fairly common at H. Meskoutine and H. R'Hira wherever there were thickets near water.

SCOTOCERCA INQUIETA SAHARÆ.

Scotocerca saharæ Sharpe, Cat. B. iv. p. 214.

♂ ad. Biskra, March 11.

Although there is only one specimen of this species in the British Museum collection, it has been found commonly of late years by Messrs. Whitaker, Koenig, and others. Except that it inhabits desert instead of hilly country, its habits seem remarkably like those of its darker eastern representative (*S. inquieta*), which I met with in Persia.

PARUS MAJOR (L.).

Parus major excelsus Brehm; Hartert, Nov. Zool. vol. ix. p. 328.

♂ ad., ♂ ad., ♂ ad. H. R'Hira, April 17, 20, & 23.

♂ ad. Les Glacières, May 10.

Great Tits vary considerably *inter se*, and I cannot find any sufficiently constant differences in the Algerian breeding-bird to warrant its separation. It is sometimes of a brighter yellow on the under parts than typical *Parus major*, but even my four specimens vary greatly. One of them is pale and greyish on the breast, almost like *Parus aphrodite* Madarász, which, as originally described, was no doubt an individual variation.

The white mark on the inner web of the outer tail-feather is also a variable character, but it tends to become constant in the Algerian bird, in which it is usually, but by no means always, noticeable as a small spot rather than a long streak. In measurements the Algerian Great Tit equals typical *Parus major*.

The Great Tit was common and breeding at H. R'Hira and in the Little Atlas. Its note seemed to me of a much deeper pitch than that of our English Great Tit.

PARUS ATER LEDOUCI.

♂ ad., ♂ ad., ♂ ad., ♂ ad. H. R'Hira, April 14, 17, & 20.

♀ ad. H. R'Hira, April 15.

There is considerable variation in the yellow of these specimens (compare Dixon, 'Ibis,' 1882, p. 571). In some the under side, cheeks, and ear-coverts are of such a pale yellow as to make the bird resemble in general colour typical *P. ater*. Both *P. ater atlas* Meade-Waldo and *P. ater ledouci* are evidently geographical forms of *Parus ater*.

The Algerian Coal Tit was a very common breeding-bird in the pine-forest at H. R'Hira and in the cedar-forest on the Little Atlas. Unlike the Great Tit and Blue Tit, it was never seen outside the forests. Its notes seemed to me much more like those of the Great Tit than those of our English Coal Tit.

PARUS CÆRULEUS ULTRAMARINUS.

♂ ad., ♀ ad. Biskra, March 7 & 9.
♀ ad. H. Meskoutine, March 26.
♀ ad. Les Glacières, May 13.

The Ultramarine Tit was fairly common wherever we travelled, when there were trees of any sort. It was common and, I think, breeding at Biskra in a garden on the edge of the desert at the beginning of March, and I found a nest in a wild olive at H. Meskoutine at the end of March, while in the cedar-forest on the Little Atlas it was common and breeding up to the highest altitudes.

CERTHIA BRACHYDACTYLA MAURITANICA.

Witherby, Bull. B. O. C. vol. xv. p. 35.

♂ ad., May 9; ♂ ad., ♂ ad., May 11; ♂ ad., May 8. Les Glacières.

The Algerian and Tunisian form of the Creeper, as I have already stated (*op. supra cit.*), differs from typical *Certhia brachydactyla* Brehm from Germany chiefly in its darker, more "black-and-white," and less rufous upper side and its more heavily marked flanks.

C. b. dorotheæ Hartert from Cyprus is even less rufous on the upper side than the Algerian form, while the flanks and under tail-coverts are greyish brown instead of rufous brown.

I may add that there is no need to compare this Algerian form of *C. brachydactyla* to see that it is altogether different from any form of *C. familiaris*.

Creepers were common and breeding in the cedar-forest on the Little Atlas at all altitudes. I found a half-finished nest in a hole in a cedar on May 14.

TROGLODYTES PARVULUS Koch.

♂ ad., ♂ juv. April 6, H. Meskoutine.
♂ ad., ♂ ad. April 22, H. R'Hira.

Wrens were common and breeding at H. Meskoutine and at H. R'Hira. Young had just flown from one nest at H. Meskoutine on April 6th, while on the same date another contained fresh eggs.

ANTHUS PRATENSIS (L.).

♀ ad., ♀ ad. H. Meskoutine, March 22 & 26.

There were a few Meadow-Pipits at H. Meskoutine, but their breeding-organs were undeveloped.

ANTHUS TRIVIALIS (L.).

♂ ad. H. Meskoutine, March 29.

♂ ad. H. R'Hira, April 17.

The Tree-Pipit was more common than the preceding species, and the example shot on April 17th had the testes much swollen, so that the bird probably nests in Algeria, although I do not think that it has yet been recorded as doing so.

PYCNONOTUS BARBATUS (Desf.).

♀ ad. H. Meskoutine, March 22.

The Dusky Bulbul was everywhere common. Its sociable habits and playfulness make it an amusing bird to watch, while its beautiful notes are a delight to the ear.

LANIUS SENATOR L.

Lanius senator rutilans (Temm.); Erlanger, J. f. O. 1899, p. 502.

♂ ad. H. Meskoutine, April 2.

♀ ad. H. R'Hira, May 5.

I cannot find any constant differences in the Red-headed Shrikes from Algeria and those from Europe. The specimen shot on April 2nd was the first seen by us in Northern Algeria.

MUSCICAPA GRISOLA L.

♂ ad. H. R'Hira, May 5.

The Spotted Flycatcher was first noticed at H. R'Hira at the end of April, after which it was common and evidently breeding.

MUSCICAPA ATRICAPILLA L.

♂ ad. H. R'Hira, April 14.

This specimen agrees exactly with others from Europe.

I have been able to examine very few breeding-birds from Algeria, but from these it appears that the white frontal spot is undoubtedly larger than in European specimens. This spot varies constantly in size, owing to the abrasion of the feathers. As the feathers become abraded the spot enlarges, owing to some of the feathers having only black tips followed by a patch of white, but in European specimens the "white-middled feathers" do not extend far enough to enable abrasion to make the spot so large as in the Algerian breeding-birds which I have examined.

Von Erlanger distinguished (J. f. O. 1899, p. 505) the Algerian form of the Pied Flycatcher under the name of *Muscicapa atricapilla speculigera* (de Selys).

The specimen which I obtained may have been a migratory bird, as its breeding-organs were undeveloped.

CARDUELIS ELEGANS AFRICANA.

Acanthis carduelis africanus Hartert, Vög. pal. Fauna, p. 69.

♀ ad., ♀ ad. Biskra, March 8 & 9.

Goldfinches from Algeria are intermediate in size between *C. e. parva* (the Madeiran race) and typical *C. elegans.* I do not think that there is any constant difference in coloration between *C. e. africana* and typical *C. carduelis,* but the smaller size of the former is important.

Goldfinches were common at Biskra, and extremely so at H. Meskoutine, where I was continually delighted by meeting with large flocks of these charming Finches.

SERINUS SERINUS (L.).

♀ ad. Biskra, March 6.

♂ ad. H. Meskoutine, March 29.

The Serin was fairly common in all the districts visited.

LIGURINUS CHLORIS AURANTIIVENTRIS Cab.

5 ♂ ad., 1 ♀ ad. H. Meskoutine, March 17 to April 5.

This brilliantly coloured form of the Greenfinch was quite the most common bird at H. Meskoutine, and was fairly common at H. R'Hira. A nest contained eggs on April 1.

COCCOTHRAUSTES VULGARIS BUVRYI Cab.

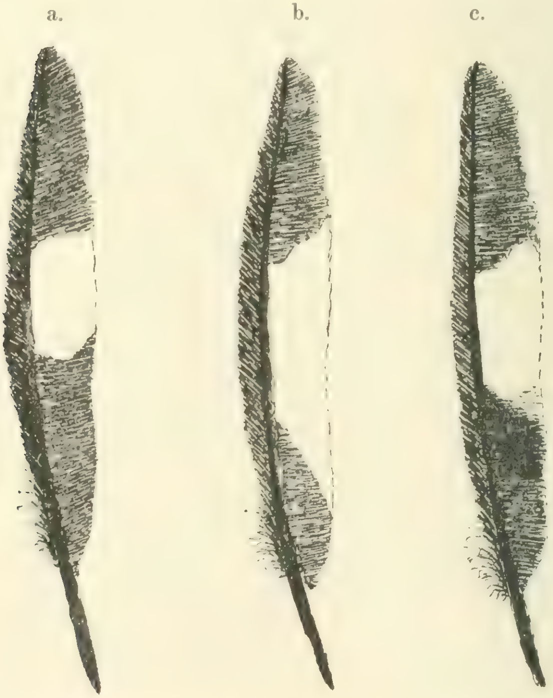
Coccothraustes buvryi Cabanis, J. f. O. 1862, p. 259.

Coccothraustes coccothraustes buvryi Cab.; Hartert, Vög. pal. Fauna, p. 57.

♂ ad., March 25; ♂ ad., ♂ ad., ♀ ad., ♀ ad., March 31. H. Meskoutine.

The Algerian Hawfinch is quite distinct from the typical European bird. Cabanis's original description is not referred to in the 'Catalogue of Birds' (vol. xii. p. 36), and there is no specimen from Algeria in the British Museum. That the Algerian form is distinct, seems to have been overlooked since 1862 until the publication of Dr. Hartert's first volume on the Palæarctic birds.

Text-fig. 15.



Fourth primaries of: a. *Coccothraustes vulgaris buvryi*; b, c. *Coccothraustes vulgaris typicus.*

I have already (Bull. B. O. C. vol. xv. p. 37) referred to *C. v. buvryi* as compared with examples of the Hawfinch from Europe. Judging by single examples, the birds from Asia Minor and from Tangier should be referred to typical *C. vulgaris*. *C. v. buvryi* is, briefly, a decidedly paler and greyer bird in both sexes, while the white markings on the wings and tail are less extensive and the bill is not so heavy.

The white mark on the fourth primary of the male is, I think, rather an interesting feature. In typical *C. vulgaris* it almost invariably extends towards the base of the feather (see text-fig. 15, p. 192), though its size tends to vary, whereas in *C. v. buvryi* it seems to have become fixed at a certain spot.

Hawfinches were fairly common and tame at H. Meskoutine, but we did not see them elsewhere. They were certainly not breeding up to the end of March, as we found them then in small companies.

PASSER DOMESTICUS (L.).

♂ ad. H. Meskoutine, March 18.

This specimen is very puzzling. It is like the English Sparrow, but all the feathers of the crown are chestnut with grey tips. When abrasion takes place, therefore, the bird must have a chestnut crown. In this it appears, from the description, to be like *Passer domesticus ahasver* Kleinschm., but the distribution of that supposed race is at present very obscure. My specimen is unlike *P. d. tingitanus* Loche, which has black markings on the crown. Our knowledge of the House-Sparrows of North Africa seems to be in rather a confused state for want of proper material. It is natural for the collector to neglect House-Sparrows until he has collected everything else.

PASSER HISPANIOLENSIS (Temm.).

♂ ad. Biskra, March 10.

♂ ad. H. Meskoutine, April 2.

Both these specimens are typical.

The Spanish Sparrow was very common at Biskra, while at H. Meskoutine we did not observe it until the beginning of April, when it appeared in numbers in trees where we had previously noticed many old nests.

FRINGILLA CŒLEBS AFRICANUS Levaill.

Hartert, Vög. pal. Fauna, p. 127.

♂ ad., ♂ ad., ♀ ad. H. Meskoutine, March 17, 26, & 29.

The Algerian Chaffinch is intermediate in colouring between the dark Morocco bird (*F. c. koenigi*) and the much paler Tunisian form (*F. c. spodiogenys*).

The bird was fairly common in Northern Algeria.

LINOTA CANNABINA (L.).

Acanthis cannabina nana (Tsch.); Hartert, Vög. pal. Fauna, p. 75.

♂ ad., ♀ ad., ♂ ad. H. Meskoutine, March 24 & 25.

Linnets from N. Africa are, on the average, a shade shorter in the wing than European birds, but the variation is very small and I can find no other constant point of difference, so I prefer not to follow Dr. Hartert in separating them.

FRINGILLARIA SAHARÆ Tristr.

♂ ad. Biskra, March 15.

This was the only individual seen.

EMBERIZA MILIARIA L.

♀ ad. Biskra, March 11.

The Corn-Bunting was fairly common wherever there was cultivation.

EMBERIZA CIRLUS L.

♂ ad., ♂ ad., ♀ ad. H. Meskoutine, March 24, April 3 & 6.

The Cirl Bunting was fairly common and breeding at H. Meskoutine and at H. R'Hira. Were it not for its often-repeated note, we should frequently have passed this bird by, as it sits so close. We sometimes found it very difficult to locate by the note, which seems to have a ventriloquial effect.

EMBERIZA CIA L.

♂ ad., ♂ ad. Les Glacières, May 8 & 12.

The Meadow-Bunting was only met with above 3500 feet on the Little Atlas Mountains. It was there fairly common, and was generally to be found on rough stony ground. The organs of the birds shot were in breeding-condition, and although I found no nest, there is no doubt that they were nesting.

ALAUDA ARBOREA L.

♀ ad. H. Meskoutine, March 22.

♀ ad., ♂ ad. H. R'Hira, April 20 and May 5.

The Wood-Lark was fairly common in the northern part of the country. It was breeding at H. R'Hira at the end of April, and in the Little Atlas in May up to an altitude of about 6000 feet.

AMMOMANES DESERTI ALGERIENSIS Sharpe.

♂ ad., ♀ ad., ♀ ad. Biskra, March 12 & 13.

This form of the Desert-Lark was common in the rocky hills round Biskra.

GALERIDA CRISTATA ARENICOLA Tristr.

Hartert, Vög. pal. Fauna, p. 232.

Ad. Biskra, March 15.

Dr. Hartert has kindly identified this specimen for me. It was the only example of *G. cristata* which I obtained in Algeria.

GALERIDA THECKLÆ SUPERFLUA.

Hartert, Vög. pal. Fauna, p. 238.

No. 5. ♀ ad. Biskra, March 8.

No. 16. ♀ ad. Biskra, March 12.

These two specimens are very puzzling. No. 5, Dr. Hartert tells me, is typical *G. t. superflua*, the other he considers a reddish variety of that form. It is quite as red as the supposed *G. t. deichleri* Erlanger, which Dr. Hartert has united with *G. t. superflua* owing to the two forms being found in the same locality. Although Crested Larks tend to vary according to their environment in a remarkable way, yet those found in any one region are generally constant in their coloration ; and if my birds are really of the same race, we have, in this case, a striking exception to the rule.

I think it possible that the breeding-ranges of these two birds may be found to be distinct. For instance, at Biskra, although I shot my two specimens actually on the same ground, they were not then nesting, and it may be proved that one breeds in the oasis and the other in the desert. Should this be so, we could regard them as different races with separate breeding-areas.

GALERIDA THECKLÆ HARTERTI Erl.

Hartert, Vög. pal. Fauna, p. 238.

♀ ad., March 17; ♂ ad., March 25. H. Meskoutine.

This very dark form of *G. theckiæ* was common at H. Meskoutine.

GARRULUS GLANDARIUS CERVICALIS Bp.

♂ ad. H. R'Hira, May 1.

♂ ad., ♀ ad., May 11; ♀ ad., May 19. Les Glacières.

The Algerian Black-headed Jay was fairly common in the pine-forest at H. R'Hira and very abundant in the cedar-forest on the Little Atlas. The usual note is very much like that of our Jay, and the bird is also fond of imitating the notes of other species. I heard one imitating the cry of a Booted Eagle to perfection, and others often imitated that of the Buzzard very well. A nest which I found at an altitude of about 5500 feet contained four fresh eggs on May 18th; it was well concealed in the top of a small cedar-tree and the bird sat very closely.

IYNX TORQUILLA (L.).

♂ ad., March 22; ♀ ad., March 28; ♂ ad., April 2. H. Meskoutine.

The Wryneck was common at H. Meskoutine during the latter part of March and beginning of April. One bird was so confiding as to sit unmoved on the branch of a small olive while I shot another in the same tree, and did not fly off until I had all but touched it.

SYRNIUM ALUCO MAURITANICUM.

Witherby, Bull. B. O. C. vol. xv. p. 36.

Ad. Les Glacières, Little Atlas, April 1903: shot by M. Charles.

As I have already pointed out (*loc. cit.*), all the Tawny Owls from Morocco and Algeria which I have examined are remarkable for their dark coloration and for their constancy in this respect.

It is an interesting fact that in this region the Tawny Owl should be subject to so little individual variation, whereas in other regions, as is well known, it is notable for its tendency to vary individually.

It may be found that the dark coloration of the North-African bird is approached by a few isolated examples from elsewhere, but the constancy of the coloration in *S. a. mauritanicum* is a sufficiently striking and important feature, in my opinion, to warrant its separation as a geographical race. I had not the good fortune to shoot a specimen of the Tawny Owl in Algeria and I only once heard the bird at H. R'Hira. Mr. Meade-Waldo, who is familiar with it in Morocco, considers its note and habits very different from those of the European Tawny Owl. He tells me that in Morocco these birds nest, like Barn-Owls, in buildings, and not in trees as they generally do in Europe, and that they breed late, generally in May.

NISAËTUS PENNATUS (Gm.).

♂ ad. H. R'Hira, April 19.

The Booted Eagle was a fairly common breeding-bird in the fir-forest at H. R'Hira and rather less common in the cedar-forest at Les Glacières. I shot this male at a new but empty nest in a pine-tree. The female never seemed to leave the vicinity. Two days after I had killed the male, she had procured another mate. On April 23 (four days after the male was shot) an egg was laid, and one of the Eagles was brooding it while the other was sitting in a tree hard by.

CIRCAËTUS GALLICUS (Gm.).

♂ ad. H. R'Hira, April 27.

There were a good many Serpent-Eagles in the pine-forest at H. R'Hira. I put a bird off a large nest containing one egg in a pine-tree. Concealing myself near I could see both parents circling high overhead for a considerable time, then one gradually descended and pitched in a tree close by.

It then went off again, but soon returned and flew straight to the nest. It proved to be the male. Its crop contained a snake (*Tropidonotus viperinus*) about eighteen inches long, apparently uninjured. Mr. Pycraft has very kindly dissected this snake, and finds that, although there is no exterior injury apparent, the base of the skull has been fractured as well as the first two vertebræ. Mr. Pycraft thinks that this injury must have been caused by the beak of the bird.

ACCIPITER NISUS (L.).

Accipiter nisus punicus Erlanger, Orn. Monatsb. 1897, p. 192.

♀ ad. H. R'Hira, April 15.
♀ ad. Near Les Glacières (6600 feet), May 11.

Both these females are bluer than usual on the upper side. The wings measure 9½ inches. I can see no difference, such as described by von Erlanger, between the male bird from Algeria and that from Europe, but I have not had many Algerian specimens for comparison.

The ovaries of these two birds contained large eggs, and I think there is no doubt that they were nesting.

CACCABIS PETROSA (Gm.).

♂ ad. H. Meskoutine, March 17.
♀ ad. H. Meskoutine, April 6.

The Barbary Partridge was everywhere present, and was especially common at H. Meskoutine.

COTURNIX COMMUNIS Bonn.

♂ ad. H. Meskoutine, March 19.

Quails were plentiful at Biskra at the beginning of March, while there were a few at H. Meskoutine and also at H. R'Hira.

It may be of some interest to add the following scanty notes regarding a few of the migratory birds of which I did not obtain specimens:—

Cuckoo first seen on April 6.	H. Meskoutine.
Golden Oriole first seen on April 21.	H. R'Hira.
Common Bee-eater first seen on May 1.	H. R'Hira.

Swallows and House-Martins were completing their nests at H. Meskoutine in the first week in April. Mr. C. Dixon recorded ('Ibis,' 1882, p. 561) these birds as building in the middle of May, and argued that they were late breeders in Algeria. On the other hand, Mr. J. H. Gurney recorded their arrival in Algeria on February 18 and 19, and found House-Martins repairing their nests on Feb. 18 ('Ibis,' 1871, pp. 74 & 300).

Song-Thrushes were exceedingly numerous amongst the wild olive-trees at H. Meskoutine until the beginning of April, when most of them disappeared. So far as I know, there is no record of a Song-Thrush breeding in North Africa.

XIX.—*On the Birds collected by the late W. G. Doggett on the Anglo-German Frontier of Uganda.* By W. R. Ogilvie-Grant.

From the notice which appeared in the obituary of 'The Ibis' for 1904 (p. 312) we learnt with regret that Mr. W. G. Doggett, the naturalist attached to the Anglo-German Boundary Commission under Lieut.-Col. C. Delmé-Radcliffe, had been drowned by the capsizing of a canoe while attempting to cross the River Kagera, the great western affluent of the Victoria Nyanza. His collections, which have been forwarded to the British Museum, contain about 450 admirably prepared skins, and include examples of two species (*Francolinus mulemæ* and *Tricholæma radcliffei*) new to science, as well as of several species (such as *Pyromelana wertheri*, *Terpsiphone emini*, *Lybius rubrifacies*, &c.) not previously represented in the National Collection.

On looking over the birds sent home I was struck by the almost entire absence of many of the smaller and more interesting Passeres which I had hoped to find, such as the lesser Grass-Warblers (*Cisticola*, *Sylviella*, &c.), always of especial interest, and I wrote to Col. Delmé-Radcliffe, pointing out this deficiency and begging him to request Doggett to pay special attention to these birds. My letter did not, however, reach its destination till after the melancholy accident had occurred. Though the collection is somewhat disappointing on account of the above-mentioned shortcomings, it is nevertheless very valuable. Every specimen bears full particulars of sex, date, and locality, while the colours of the soft parts are indicated in every instance by spots of water-colour, affording a much clearer and more satisfactory record than any description.

As in most instances the species represented do not call for any special remark, I have merely appended a list of the birds collected in each locality, followed by notes on such as seem to demand them. The names of the latter will be found marked in the lists with an asterisk (*).

1. *Buddu, western shore of Victoria Nyanza.*
December 1902.

Ceryle maxima. Great African Kingfisher.
Halcyon cyanoleucus. Angola Kingfisher.
Pandion haliaëtus. Osprey.
Haliaëtus vocifer. Vociferous Sea-Eagle.
Nettopus auritus. African Pigmy Goose.
Hagedashia hagedash. Hadadah Ibis.
Anastomus lamelligerus. Open-billed Stork.
Erythrocnus rufiventris. Rufous-bellied Heron.
Nycticorax nycticorax. Night-Heron.
Ardea goliath. Great Heron.
Squatarola helvetica. Grey Plover.
Larus fuscus. Lesser Black-backed Gull.
Ægialitis pecuaria. Kittlitz's Sand-Plover.
Glottis nebularius. Greenshank.

2. *Msozi, western shore of Victoria Nyanza.*
February 1093.

Hyphantornis abyssinicus. Abyssinian Weaver-Finch.
*—— *fischeri.* Fischer's Yellow-backed Weaver-Finch.
**Icteropsis pelzelni.* Pelzeln's Weaver-Finch.
Melanopteryx nigerrima. Black Weaver-Finch.
Macronyx croceus. Southern Yellow-breasted Pipit.
**Zosterops scotti.* Scott Elliot's White-eye.
**Camaroptera chrysocnemis.* Abyssinian Green-backed Bush-Warbler.

Thamnolæa nigra. Black Robin.
**Terpsiphone emini.* Emin's Paradise-Flycatcher.
—— *cristata.* Abyssinian Paradise-Flycatcher.
Lybius æquatorialis. Equatorial Barbet.
Coccystes cafer. Levaillant's Cuckoo.
Ceuthmochares aëneus. West-African Coucal.
Merops persicus. Persian Bee-eater.
Bubo lacteus. Verreaux's Eagle-Owl.
—— *maculosus.* Spotted Eagle-Owl.
**Cerchneis ardesiaca.* Grey Kestrel.
Helotarsus ecaudatus. Bateleur Eagle.
Podicipes capensis. South-African Dabchick.

3. *Mouth of Kagera River.*—February 1903.

Dendrocycna viduata. White-faced Tree-Duck.

4. *Mulema, Southern Uganda.*—March, April, May, 1903.

Corvultur crassirostris. Thick-billed Raven.
Dilophus carunculatus. Wattled Starling.
Pholidauges verreauxi. Verreaux's Glossy Starling.
Buchanga assimilis. African Drongo.
Oriolus auratus. Black-winged Golden Oriole.
Penthetria eques. Chestnut-shouldered Weaver-Finch.
**Pyromelana wertheri.* Werther's Weaver-Finch.
Estrilda phœnicotis. Crimson-eared Waxbill.
Pytelia melba. Southern Red-faced Weaver-Finch.
Anaplectes melanotis. Black-eared Scarlet Weaver-Finch.
Hyphantornis abyssinicus. Abyssinian Weaver-Finch.
—— *xanthops.* Golden-faced Weaver-Finch.
*—— *shelleyi.* Shelley's Weaver-Finch.
Passer swainsoni. Swainson's Sparrow.
**Serinus icterus.* Yellow Serin-Finch.
*—— *sulphuratus.* Brimstone Serin-Finch.
Emberiza flaviventris. Yellow-bellied Bunting.
Fringillaria septemstriata. Rufous-winged Rock-Bunting.
Mirafra africana. Rufous-naped Lark.
—— *fischeri.* Fischer's Bush-Lark.
Tephrocorys cinerea. Southern Rufous-capped Lark.
Anthus pyrrhonotus. Cinnamon-breasted Pipit.
—— *rufulus.* Indian Pipit.
Macronyx croceus. Southern Yellow-breasted Pipit.
Ægithalus musculus. Penduline Titmouse.
**Parus insignis.* Cabanis's Black Titmouse.
Lanius excubitorius. Long-tailed Grey-backed Shrike.

Laniarius major. Hartlaub's Pied Bush-Shrike.
—— *sulphureipectus.* Yellow-fronted Bush-Shrike.
Telephonus senegalus. Senegal Bush-Shrike.
Nilaus minor. Lesser Bush-Shrike.
Prionops talacoma. South-African Helmeted Shrike.
Phylloscopus trochilus. Willow-Warbler.
**Eremomela citriniceps.* Yellow-headed Bush-Warbler.
Euprinodes pulchellus. Most Beautiful Bush-Warbler.
Cisticola strangei. Strange's Fan-tail Warbler.
Prinia mystacea. Tawny-flanked Grass-Warbler.
Melanocichla mentalis. Great Grass-Warbler.
Saxicola falkensteini. Falkenstein's Wheatear.
Thamnolæa nigra. Black Robin.
Erythropygia ruficauda. Rufous-tailed Chat-Thrush.
Turdus pelios. Ethiopian Thrush.
Crateropus sharpei. Sharpe's Babbling-Thrush.
—— *kirki.* Kirk's Babbling-Thrush.
Pycnonotus layardi. Layard's Bulbul.
Campophaga hartlaubi. Hartlaub's Cuckoo-Shrike.
Bradyornis murinus. Angolan Robin-Shrike.
Terpsiphone cristata. Abyssinian Paradise-Flycatcher.
Batis molitor. White-flanked Flycatcher.
Hirundo senegalensis. Great African Mosque-Swallow.
Pitta angolensis. Angolan Ant-Thrush.
Campothera nubica. Nubian Woodpecker.
**Mesopicus pæocephalus.* Swainson's Grey-headed Woodpecker.
**Dendropicus zanzibari.* Zanzibar Woodpecker.
Thripias namaquus. Bearded Woodpecker.
Indicator indicator. Stripe-winged Honey-Guide.
**Lybius rubrifacies.* Reichenow's Red-faced Barbet.
**Tricholæma radcliffei.* Delmé-Radcliffe's Barbet.
Gymnoschizorhis leopoldi. Prince Leopold's Touraco.
Cuculus canorus. Common Cuckoo.
Chrysococcyx cupreus. Golden Cuckoo.
Caprimulgus fossei. Mozambique Nightjar.
Lophoceros epirhinus. Southern Black-billed Hornbill.
Upupa africana. African Hoopoe.
**Irrisor erythrorhynchus.* Red-billed Wood-Hoopoe.
Rhinopomastus schalowi. Schalow's Wood-Hoopoe.
Merops apiaster. Common Bee-eater.
Halcyon chelicutensis. Striped Kingfisher.
Pœocephalus meyeri. Meyer's Parrot.
Bubo lacteus. Verreaux's Eagle-Owl.
Glaucidium perlatum. Pigmy Owl.
Falco tanypterus. Black-fronted Lanner Falcon.

Falco subbuteo. Hobby.
Melierax gabar. Red-faced Goshawk.
Circus macrurus. Long-tailed Harrier.
Buteo augur. Augur Buzzard.
Lobivanellus senegalus. Senegal Wattled Lapwing.
*_Stephanibyx inornatus._ Swainson's Lapwing.
Cursorius temmincki. Temminck's Courser.
Chalcopelia afra. Metallic-Spotted Dove.
Turtur senegalensis. Senegal Turtle-Dove.
—— _semitorquatus._ Half-collared Turtle-Dove.
—— _damarensis._ Damaraland Turtle-Dove.
Francolinus coqui. Coqui Francolin.
—— _shelleyi._ Shelley's Francolin.
*—— _mulemæ._ Mulema Francolin.
Pternistes cranchi. Cranch's Bare-throated Francolin.

5. _Ketoma, Southern Uganda._—May 1903.

Anthus pyrrhonotus. Cinnamon-breasted Pipit.
Pœocephalus meyeri. Meyer's Parrot.

6. _Burumba, Southern Uganda._—July, August, 1903.

Lamprocolius chalybeus. Common Glossy Starling.
Dilophus carunculatus. Wattled Starling.
Oriolus larvatus. Black-masked Golden Oriole.
—— _auratus._ Black-winged Golden Oriole.
Spermestes cucullatus. Green-flanked Bronze Manakin.
Hyphantornis xanthops. Golden-faced Weaver-Finch.
*—— _shelleyi._ Shelley's Weaver-Finch.
Dryoscopus funebris. Slate-backed Bush-Shrike.
Laniarius sulphureipectus. Yellow-fronted Bush-Shrike.
Thamnolæa nigra. Black Robin.
Pycnonotus layardi. Layard's Bulbul.
*_Psalidoprocne albiceps._ White-headed Rough-winged Swallow.
*_Dendropicus lafresnayei._ Lafresnaye's Woodpecker.
*—— _zanzibari._ Zanzibar Woodpecker.
Gymnoschizorhis leopoldi. Prince Leopold's Touraco.
*_Prodotiscus regulus._ Wahlberg's Honey-Guide.
Centropus superciliosus. White-eyebrowed Lark-heel Cuckoo.
Hapaloderma narina. Narina Trogon.
Colius berlepschi. Count Berlepsch's Coly.
Cosmetornis vexillarius. Pennant-winged Nightjar.
Caprimulgus fossei. Mozambique Nightjar.
—— _natalensis._ Natal Nightjar.
Rhinopomastus schalowi. Schalow's Wood-Hoopoe.

Melittophagus meridionalis. Southern Bee-eater.
Pœocephalus meyeri. Meyer's Parrot.
Elanus cæruleus. Black-shouldered Kite.
Lobivanellus senegalus. Senegal Wattled Lapwing.
Rhinoptilus chalcopterus. Bronze-winged Courser.
Vinago calva. Bald Fruit-Pigeon.
Pternistes cranchi. Cranch's Bare-throated Francolin.

7. *South-west Ankole.*—October, November, 1903.

Vidua principalis. Pin-tailed Whydah-Finch.
Penthetria ardens. Flame-shouldered Weaver-Finch.
Urobrachya phœnicea. Heuglin's Fan-tailed Finch.
Pyromelana xanthomelæna. Yellow-shouldered Weaver-Finch.
*—— *wertheri.* Werther's Weaver-Finch.
Quelea cardinalis. Hartlaub's Cardinal Weaver-Finch.
Fringillaria septemstriata. Rufous-winged Rock-Bunting.
Telephonus minutus. Least Bush-Shrike.
Hirundo rustica. Common Swallow.
Gallirex chlorochlamys. Zambesian Purple-crested Touraco.
Merops apiaster. Common Bee-eater.
—— *persicus.* Persian Bee-eater.
Coracias caudatus. Long-tailed Roller.
Falco subbuteo. Hobby.
Neotis caffra. Caffer Bustard.
Rhynchæa capensis. Painted Snipe.
Columba guinea. Triangular-spotted Pigeon.
Turtur senegalensis. Senegal Turtle-Dove.
—— *semitorquatus.* Half-collared Turtle-Dove.

8. *Lake Ruaketenge, South-west Ankole.*—November 1903.

Strix capensis. South-African Barn-Owl.
Circus æruginosus. Marsh-Harrier.
Nyroca brunnea. Brown Pochard.
Thalassiornis leuconota. White-backed Stiff-tailed Duck.
Anas undulata. Yellow-billed Duck.
Pœcilonetta erythrorhyncha. Crimson-billed Duck.
Nettion punctatum. Spotted Teal.
Dafila acuta. Pin-tail Duck.
Ibis æthiopica. Sacred Ibis.
Anastomus lamelligerus. Open-billed Stork.
Scopus umbretta. Hammer-head Stork.
Ardetta podicipes. African Little Bittern.
Bubulcus lucidus. Buff-backed Heron.
Ardea melanocephala. Great Black-headed Heron.
Balearica pavonina. Crowned Crane.

Gallinago nigripennis. Black-winged Snipe.
—— *major.* Solitary Snipe.
—— *gallinago.* Common Snipe.
Porphyrio porphyrio. African Purple Gallinule.
Fulica cristata. Crested Coot.

9. *Lake Karenge, South-west Ankole.*—December 1903.

Nyroca brunnea. Brown Pochard.
Anas undulata. Yellow-billed Duck.
Nettion punctatum. Spotted Teal.
Limnocorax niger. Black Rail.
Crex crex. Land-Rail.
Porzana intermedia. Baillon's Crake.

Notes on some of the Species in the foregoing List.

ICTEROPSIS PELZELNI (Hartl.).

Sitagra pelzelni Neum. J. f. O. 1900, p. 282 [Kome I., Victoria Nyanza].

Ploceus pelzelni Reichenow, Vög. Afr. iii. p. 75 (1904).

The only examples of this species in the British Museum are from Wadelai, Equatorial Africa. They agree perfectly with the birds before us, which were collected at Msozi, on the western shore of Victoria Nyanza.

HYPHANTORNIS SHELLEYI Sharpe.

An adult male in change-plumage, killed at Burumba in August, and a so-called female (? immature male) from Mulema, in April, apparently belong to this species.

HYPHANTORNIS FISCHERI (Reichenow).

Ploceus fischeri Reichenow, Vög. Afr. iii. p. 70 (1904).

An adult male from Msozi, on the western shore of Victoria Nyanza, agrees well with a series of specimens from Wadelai and Magungo, Equatorial Africa, but the back is slightly more olivaceous in tint. One specimen, however, in the series is very similar in this respect.

PYROMELANA WERTHERI Reichenow.

Pyromelana wertheri Reichenow, Vög. Afr. iii. p. 122 (1904).

Doggett's collection contains two males in full breeding-dress from Mulema, procured in April, and a male from

South-west Ankole, killed in October, beginning to assume the breeding-plumage. The form may be at once recognised from the nearly-allied but larger *P. oryx* by its having the black on the forehead narrower, not extending behind the posterior margin of the eye, the black below the head restricted to the chin, not extending to the throat, and the colour of the mantle and back much paler and of a light cinnamon or brownish-buff.

This species is new to the British Museum.

SERINUS SULPHURATUS (Linn.).

Serinus sulphuratus Reichenow, Vög. Afr. iii. p. 265 (1904).

Serinus sharpei Neum.; Reichen. t. c. p. 266 (1904).

A single male Serin collected at Mulema, in Southern Uganda, belongs to the smaller-billed race of *S. sulphuratus*, which has been named *S. sharpei* Neum. After carefully comparing a considerable amount of material from British East Africa and Uganda with typical examples of *S. sulphuratus* from other parts of Africa I am unable to recognise the validity of this subspecies. The bird procured by Doggett no doubt differs considerably from typical *S. sulphuratus* and agrees well with the description of *S. sharpei*, but specimens from Lake Naivasha, Lake Nakuro, Eldoma Ravine, and Mount Elgon are intermediate in character, both as regards the size of the bill and the coloration of the rump and breast.

SERINUS ICTERUS (Vieill.).

Serinus icterus Reichenow, Vög. Afr. iii. p. 269 (1904).

Four specimens of the Yellow Serin-Finch collected at Mulema, Southern Uganda, in April and May, are in freshly-moulted plumage, and have the general colour of the upper parts of a greener tint than the majority of examples in the British Museum. Equally bright specimens are, however, to be found in our series from Natal, procured in June and July.

PARUS INSIGNIS Cab.

Parus insignis Shelley, B. Afr. ii. p. 231 (1900).

A male example from Mulema apparently belongs to this species, but seems to be somewhat smaller (wing 3·45 in.) than specimens from Nyasaland. It has both upper and under parts glossed with dull oily green, and closely resembles a specimen collected by Monteiro in Angola, where the type-specimen was obtained by Schütt.

ZOSTEROPS SCOTTI Neum.

Zosterops scotti Finsch, Das Tierreich, Zosterop. p. 33 (1901).

An adult female from Msozi, on the west coast of Victoria Nyanza, appears to belong to the form found on Ruwenzori, which bears the name of *Z. scotti* Neum. It differs from typical examples of *Z. jacksoni* from the north-east of Lake Victoria in having the band across the forehead paler and more extended, merging gradually into the colour of the crown, which is paler than in *Z. jacksoni*.

TERPSIPHONE EMINI Reichenow.

Tchitrea emini Reichenow, Vög. Afr. ii. p. 512 (1903).

A fine adult pair of this chestnut-coloured Paradise-Flycatcher was procured at Msozi, on the western shore of Victoria Nyanza. This species was not previously represented in the National Collection, but there are specimens in Mr. Jackson's collection from Toro and Entebbe, Uganda.

In the male the long middle pair of chestnut tail-feathers measure 7·85 inches (=200 mm.).

PSALIDOPROCNE ALBICEPS Sclater.

Doggett collected a fine series of this lovely little White-headed Rough-winged Swallow at Burumba, Southern Uganda. An immature bird has the crown sooty-brown, shading into whitish on the sides of the occiput; the upper part of the cheek is also washed with sooty-brown.

EREMOMELA CITRINICEPS (Reichenow).

Tricholais citriniceps Reichenow, J. f. O. 1882, p. 210 [Kakoma].

As I am not quite satisfied that *E. citriniceps* is really synonymous with *E. pulchra* (Bocage) from Caconda, I prefer to use the former name. The type of *E. citriniceps* was obtained at Kokoma, in the Ugalla country to the east of Lake Tanganyika.

CAMAROPTERA CHRYSOCNEMIS (Licht.).

Camaroptera chrysocnemis Grant & Reid, Ibis, 1901, p. 648.

Camaroptera griseoviridis Neum. J. f. O. 1900, p. 305.

Doggett procured a male of the Abyssinian Green-backed Bush-Warbler at Msozi. Adult and immature examples from Entebbe have recently been presented to the National Collection by Mr. R. J. Cuningham.

TRICHOLÆMA RADCLIFFEI Grant, Bull. B. O. C. xv. p. 29 (1904).

Adult male. Differs from the male of *T. lachrymosa* chiefly in having the subterminal black spots on the feathers of the head and flanks *rounded* instead of pear-shaped, the under parts washed with yellow instead of buff, and the median and lesser wing-coverts uniform, not spotted at the tip with buff. Iris golden yellow; bill and feet black. Total length about 5·1 inches; culmen 0·62; wing 2·7; tail 1·7; tarsus 0·7.

Adult female. Similar to the male, but slightly smaller. Total length about 5 inches; culmen 0·61; wing 2·65; tail 1·55; tarsus 0·65.

Both male and female types were procured at Mulema, Southern Uganda, in April and June. A third example was obtained in the same locality in March.

A fourth example of this species in the collection of Mr. F. J. Jackson was procured at Kigoma, Uganda.

LYBIUS RUBRIFACIES Reichenow.

Lybius rubrifacies Reichenow, Vög. Afr. ii. p. 124 (1902).

Two males and two females of this fine Barbet were procured at Mulema in May. This species is new to the National Collection. It is easily distinguished from the only nearly allied form, *L. abyssinicus*, by its having the chin, throat, and chest brownish-black instead of scarlet, and the upper wing-coverts uniform black instead of black edged with white. A younger bird, with the cutting-edge of the upper mandible very slightly notched, differs from the adult in having the feathers of the forehead black, without red tips.

IRRISOR ERYTHRORHYNCHUS (Lath.).

Four specimens of Wood-Hoopoe from Mulema appear to be typical examples of this species. Since I distinguished and characterised the different red- and black-billed species of *Irrisor*, which had all been united in the 'Catalogue of Birds,' xvi. p. 19, under the name *I. erythrorhynchus* (*cf.* 'Ibis,' 1902, pp. 132–135), ornithologists have paid closer attention to the genus, and no less than five new forms have been described—one by Dr. Reichenow and four by Mr. Oscar Neumann.

Dr. Reichenow has distinguished the West-African form of *I. erythrorhynchus* as *I. e. guineensis*, and Mr. Neumann has separated the red-billed birds from the White Nile and Shoa as *I. e. niloticus*.

While naming the birds in the present collection, I have again examined the whole of our series of skins of *Irrisor*, which has been largely augmented since 1902. I can only assert that it seems to me impossible to recognise either of these supposed subspecies, which appear to me to have no real existence. Mr. Neumann has also divided the black-billed species, which I called *Irrisor melanorhynchus* (Licht.) [=*I. senegalensis* (Vieill.); Reich. Vög. Afr. ii. p. 341 (1902)], into three subspecies:—

1. *I. e. senegalensis.* *Hab.* West Africa.
2. *I. e. abyssinicus.* *Hab.* North Abyssinia, Bogosland, and Erythrea.
3. *I. e. neglectus.* *Hab.* Shoa.

Here, again, I cannot accept Mr. Neumann's conclusions, which appear to me to be due to a misinterpretation of the real facts, and I can only recognise one form ranging from West Africa to Abyssinia. It is true that *some* birds from the Anseba Valley and other localities in North Abyssinia have the bill partly red; but this character varies greatly in individuals, and we find specimens both from Shoa and West Africa with some red at the base of the mandible. On the other hand, a number of *fully adult birds, both male and female,* from the Anseba Valley, &c., have the bill entirely black. Quite young birds also have the bill black. The birds with partly red bills mentioned above are possibly all females, the only specimen in which the sex is marked being of that sex. Probably the partly red bill is merely a transitional stage. Far too much reliance is often placed on the metallic colours of the plumage, which are very easily affected by weather, and especially by wet. It requires but a simple experiment to prove this. Take a skin of such a bird as *Nectarinia metallica,* wet the metallic-green feathers on head and throat, and they become purple in a few moments! In the same way, purple or blue, if wet, become green.

IRRISOR DAMARENSIS Grant.

The fourth form described by Mr. Neumann is *I. d. granti,* based on an example from British East Africa in Mr. F. J. Jackson's collection. I referred this bird and another from the same locality to the present species with some reserve (*cf.* 'Ibis,' 1902, p. 434). Mr. S. L. Hinde has recently forwarded another fine male example from Machakos (April), which, like Mr. Jackson's birds (March and April), is in freshly moulted spring plumage. Our series of Damaraland birds was all procured between June and October; the June bird, which is naturally the least worn of the series, closely resembles the birds from British East Africa, and I am still disposed to believe that the differences in plumage between typical *I. damarensis* and the so-called *I. d. granti* are due to season. The question cannot be settled till we receive examples from British East Africa killed in the summer and autumn.

PRODOTISCUS REGULUS Sundev.

A female example of this species procured at Burumba in July has the three outer pairs of tail-feathers pure white, the third feather on the right side only being edged with brown towards the tip of the outer and the base of the inner web. The white outer tail-feathers are apparently characteristic of *immaturity*; the *adult birds* having the outer feathers white, tipped and more or less margined with brown.

Dr. Reichenow [Vög. Afr. ii. p. 114 (1902)] has united with this species *P. peasei* Grant, which has the outer feathers dark brown, with only an indication of a narrow white stripe next to the shaft on the basal half of the inner web. This is evidently a mistake, as is also his synonym *P. zambesiæ* Shelley, which belongs to the olive-backed section!

DENDROPICUS ZANZIBARI Malh.

Three specimens collected at Mulema and one at Burumba are undoubtedly typical examples of this barred-backed species. They agree exactly with specimens from Zanzibar procured by Fischer and named *D. hartlaubi*. Whether they are really identical with typical *D. hartlaubi* Malh., from Natal, is another question.

DENDROPICUS LAFRESNAYI Malh.

An adult female of this species was procured at Burumba. It may be at once distinguished from the female of *D. zanzibari* by the uniform colour of the back.

MESOPICUS PŒOCEPHALUS (Swains.).

Mesopicus pœocephalus Grant, Ibis, 1902, p. 425; Sharpe, Ibis, 1902, p. 641.

An immature male and an adult female from Mulema belong to this form, which ranges northward through the Niam-niam and Sük countries to the White Nile. It has been described as *M. goertæ centralis* Reichenow.

CERCHNEIS ARDESIACA (Vieill.).

Cerchneis ardosiacea Reichenow, Vög. Afr. i. p. 636 (1901).

A fine male of this rare species was procured at Msozi, on the western shore of Victoria Nyanza, in February. The wings are in moult, and all the primary quill-feathers have been renewed except the two outer pairs.

STEPHANIBYX INORNATUS (Swains.).

An adult male and female and an immature female were procured at Mulema in May. These specimens make a very welcome addition to the National Collection, which contained only two West-African specimens in somewhat poor condition.

FRANCOLINUS MULEMÆ Grant.

Francolinus mulemæ Grant, Bull. B. O. C. xiv. p. 30 (1903).

Adult male and female. Most nearly allied to *F. levaillanti* (Valenc.) and *F. kikuyuensis* Grant. They resemble the former in the colour and markings of the head and neck, the chin and middle of the throat being pure white, but, as in *F. kikuyuensis*, the mottled black and white stripes surrounding the crown are interrupted on the nape by the chestnut collar and are not continued down the back of the neck in a nuchal band, and the chestnut white-shafted feathers are confined to the chest, the breast and belly being buff, more or less blotched, especially on the sides of the body, with blackish-chestnut. *F. kikuyuensis* always has the entire chin and throat suffused with buff. Total length 13 inches; wing 6·2; tail 2·7; tarsus 2·1; bare portion of culmen 1·2.

This fine Francolin is perhaps the most interesting of Doggett's discoveries. The types were procured at Mulema, in Southern Uganda, at an elevation of about 5000 feet, in the month of March. Other specimens, including an immature bird, were collected in the same locality in March, April, and June, and an adult male was procured in S.W. Ankole in the month of November.

The young bird resembles the adult in general appearance, but the bands surrounding the throat and occiput are composed of buff feathers tipped with brown instead of white feathers tipped with black, and the middle of the breast is more barred with reddish-brown than in the adult.

XX.—*On the Birds of the South-eastern Part of the Protectorate of Sierra Leone.* By ROBIN KEMP. *With Notes by* R. BOWDLER SHARPE, LL.D.

(Plate V.)

ON the 7th of March, 1902, I landed for the first time in Sierra Leone, since which date I have spent my whole time there, broken by two periods of leave of absence in England. Many birds have thus come into my hands, which I have preserved, and concerning which I have made notes and observations.

All the specimens have been obtained and the observations made in the Mendi country, or south-eastern part of the Colony of Sierra Leone—the great majority of them at Bo, 450 feet above sea-level, but a good many at Rotifunk (about 50 feet above sea-level), situated on a small river called the Bumpeh, which is tidal just as far as that town. The country is entirely covered with bush or small forest, broken here and there by rice-farms and swamps, and has six large rivers flowing in a southerly direction. The staple food of the natives is rice, which is grown by them in large clearings, or farms, made each year on fresh land from the thick bush. After one year's crop of rice, which is interspersed with cotton-plants, the clearing is allowed to go back to bush-growth for seven years. These farms are frequented by numbers of hard-billed birds.

The total number of skins obtained, up to the time of writing, is six hundred and twenty, comprising examples of about one hundred and forty-five species. There are about twenty more species which I have seen, but of which, so far, I have failed to obtain specimens.

When I commenced to collect birds here it was with the idea of making a water-colour drawing of each of them, which object, with the help of my mother in England, I have been successful in attaining, with few exceptions. It was an after-thought to skin and preserve the birds.

The subjoined table (p. 214) shews the rainfall in conjunction with the breeding-times of such birds as I have been able to observe.

Table of Breeding-Months and Rainfall.

E. Eggs. B. Building. Y. Nestlings or quite young birds.

	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Months' rain at Bo, 1903	·08	·00	·00	3·11	9·89	10·5	17·7	25·9	14·6	13·8	4·20	1·18
Milvus ægyptius	..	..	..	..	..	Y	Y					
Accipiter büttikoferi	.	.	..	..	B							
Polyborides typicus	Y	Y										
Syrnium nuchale	..	..	..	..	Y							
Fiscus smithi	..	..	..	..	..	Y						
Pycnonotus barbatus	..	..	..	..	..	..	Y					
Cisticola strangei	..	..	..	..	..	..	Y					
Corvus scapulatus	..	..	..	..	..	..	Y					
Pyromelana flammiceps	..	..	..	..	..	..	..	..	..	B		
Malimbus rubricollis	..	..	..	..	..	..	..	Y				
Pyrenestes coccineus	..	..	..	..	..	..	..	E				
Spermestes cucullatus	E	Y	..	..	..	..	..	..	E	Y		
Sitagra brachyptera	..	..	..	..	..	..	..	..	E	E	E	
Hyphantornis cucullatus	..	Y	..	..	..	..	..	B	B	B		
Cinnamopteryx tricolor	..	..	..	..	..	Y						
Turacus buffoni	..	..	..	..	E							
Tigrornis leucolopha	..	..	..	..	..	..	..	..	..	..	Y	
Francolinus thornei	Y											

For their kindly assistance in naming the skins that I have brought home and in giving me useful information as to what birds to look for more particularly, I have to thank both Dr. Bowdler Sharpe and Captain Shelley.

[Considering the number of years that Sierra Leone has been a British Protectorate, it is somewhat surprising that so little has been done towards a history of its Fauna, and Mr. Kemp's contribution is very welcome. Sir Edward Sabine procured examples of a few species of birds from this district (such as *Chaunonotus sabinei*), and Louis Fraser obtained a few others, such as *Pitta pulih.* Sundevall described in 1849 the collection made by Professor Adam Afzelius sixty years before, and a few specimens collected by Dr. Clarke were sent to Mr. Samuel Stevens, and were mostly purchased by the late Marquis of Tweeddale, though some passed into the collections of Captain Shelley and myself. The Avifauna of the adjoining Republic of Liberia has been so effectively worked out by Dr. Büttikofer that it is highly necessary that we should have an equal knowledge of the birds of Sierra Leone, and Mr. Kemp has certainly made an interesting commencement of this task.—R. B. S.]

1. FRANCOLINUS LATHAMI.

Francolinus lathami Hartl.; Grant, Cat. B. xxii. p. 139 (1893); Sharpe, Hand-l. B. i. p. 23 (1899); Reichen. Vög. Afrikas, i. p. 498 (1901).

Bo, June 1904. Irides dark brown; bill and claws black; feet chrome-yellow.

This is a rare species in the Sierra Leone district.

2. FRANCOLINUS AHANTENSIS.

Francolinus ahantensis Temm.; Grant, Cat. B. xxii. p. 171 (1893); Sharpe, Hand-l. B. i. p. 25 (1899); Reichen. Vög. Afrikas, i. p. 470 (1901).

Rotifunk, October 1902. Feet scarlet.

This is quite a scarce bird. Of nearly a hundred Francolins which I have been able to handle, one only was of this red-legged species, all the rest being *F. thornii,* which has green legs.

3. Francolinus thornii.

Francolinus thornei Grant, Bull. B. O. C. xiii. p. 22 (1902).

Bo: June, August, September, October 1903. Irides dark hazel; bill yellow, with black culmen; feet yellowish olive-green; claws brownish; eyelids dull yellow.

An immature chick was procured at Bo in January 1904.

This Francolin is common and resident throughout the year. It frequently perches on trees and bushes when flushed from the railway-line. The eggs are often found by the natives while gathering the rice in December and January, and are always two in number. The natives say that there is one nesting-period only, though the state of immaturity of many specimens shot by our men scarcely corroborates this. A hen shot on the 30th of September proved on examination to contain a well-developed egg. Some of our white staff allege that there are three seasons of breeding in the course of the year, judging by the birds which they have shot.

4. Vinago sharpii.

Vinago sharpei Reichenow, Orn. MB. x. p. 45 (1902).

A series of skins from Rotifunk and Bo. Bill pale horn-coloured; bare face scarlet; irides blue; feet yellow.

This bird never flies to the ground, and it is stated by the natives here that it will break off a twig purposely to walk down it to the ground if no branch be available. Its principal food consists of a berry which grows in great quantities and goes by the name of "Christmas-seed." Captive Pigeons of this species, which I have kept, have invariably died in a few days.

5. Turturœna iriditorques.

Turturœna iriditorques (Cass.); Salvad. Cat. B. xxi. p. 327 (1893); Sharpe, Hand-l. B. i. p. 73 (1899); Reichen. Vög. Afrikas, i. p. 419 (1901).

Moyamba, 1902.

Quite a scarce and little-known species with us.

6. Streptopelia semitorquata.

Streptopelia semitorquata (Rüpp.); Sharpe, Hand-l. B. i. p. 78 (1899).

Turtur semitorquatus Reichen. Vög. Afrikas, i. p. 409 (1901).

This Pigeon is resident throughout the year and very common. At times it assembles in large flocks of from thirty to forty birds.

7. CHALCOPELIA AFRA.

Chalcopelia afra (C.); Salvad. Cat. B. xxi. p. 506 (1893); Sharpe, Hand-l. B. i. p. 83 (1899); Reichen. Vög. Afrikas, i. p. 426 (1901).

Bo, June 1902. Quite a common Dove here.

8. TYMPANISTRIA TYMPANISTRIA.

Tympanistria tympanistria (Temm. & Knip); Sharpe, Hand-l. B. i. p. 83 (1899); Reichen. Vög. Afrikas, i. p. 424 (1901).

Very plentiful and resident throughout the year.

The natives frequently snare these Doves, many of which I have caged, but always with ill-success, as they have invariably died within three or four months of their capture.

9. CHALCOPELIA PUELLA.

Chalcopelia puella (Schl.); Salvad. Cat. B. xxi. p. 523 (1893); Sharpe, Hand-l. B. i. p. 84 (1899); Reichen. Vög. Afrikas, i. p. 423 (1901).

Bo, July 1904. Iris black; bill greenish horn-coloured; nostrils pink; feet crimson.

This Dove is very rare here.

10. SAROTHRURA BONAPARTII.

Sarothrura bonapartei (Hartl.); Sharpe, Hand-l. B. i. p. 103 (1899); Reichen. Vög. Afrikas, i. p. 290 (1900).

♂. Bo, August 1904. Irides brown; upper mandible dark slate-coloured, lower mandible bluish slate-coloured; feet and claws lavender-blue, inclining to slate-coloured.

[The single specimen sent by Mr. Kemp has lost its tail, which makes identification difficult (*cf.* Sharpe, Cat. B. xxiii. p. 115, 1894), but I believe that I am right in ascribing it to *S. bonapartei*. Being a Crake, and therefore difficult to procure under any circumstances, it can well be believed that this species occurs throughout West Africa, and yet may have escaped the notice of many collectors.—R. B. S.]

11. TRINGOIDES HYPOLEUCUS.

Tringoides hypoleucus (L.); Sharpe, Hand-l. B. i. p. 161 (1899); Reichen. Vög. Afrikas, i. p. 224 (1900).

Rotifunk, November 1902.

Bo, October 1903.

12. GALLINAGO GALLINAGO.

Gallinago gallinago (L.); Sharpe, Hand-l. B. i. p. 165 (1899); Reichen. Vög. Afrikas, i. p. 237 (1900).

Bo, January 1904. Feet dirty whitish olive.

13. PLEGADIS FALCINELLUS.

Plegadis falcinellus (L.); Sharpe, Cat. B. xxvi. p. 25 (1898); id. Hand-l. B. i. p. 187 (1899).

Plegadis autumnalis (Hasselq.); Reichen. Vög. Afrikas, i. p. 329 (1901).

An immature bird from Mano, on the Taia River, 1902.

14. ARDEA CINEREA.

Ardea cinerea L.; Sharpe, Cat. B. xxvi. p. 194 (1898); id. Hand-l. B. i. p. 194 (1899); Reichen. Vög. Afrikas, i. p. 379 (1901).

Bo, 1904.

15. BUTORIDES ATRICAPILLA.

Butorides atricapilla (Afzel.); Sharpe, Cat. B. xxvi. p. 172 (1898); id. Hand-l. B. i. p. 199 (1899); Reichen. Vög. Afrikas, i. p. 370 (1901).

Rotifunk, October 1902.

Bo, June 1904.

16. TIGRORNIS LEUCOLOPHA.

Tigrornis leucolopha (Jard.); Sharpe, Cat. B. xxvi. p. 191 (1898); id. Hand-l. B. i. p. 200 (1899).

Tigrisoma leucolophum Reichen. Vög. Afrikas, i. p. 365 (1901).

Rotifunk, November 1902. An immature bird in the downy state was brought in alive by natives.

17. **Dendrocycna viduata.**

Dendrocygna viduata (L.); Salvad. Cat. B. xxvii. p. 142 (1898); Sharpe, Hand-l. B. i. p. 214 (1899); Reichen. Vög. Afrikas, i. p. 124 (1900).

Rotifunk, November 1902.

At Rotifunk this Tree-Duck was plentiful.

18. **Phalacrocorax africanus.**

Phalacrocorax africanus (Gm.); Grant, Cat. B. xxvi. p. 407 (1898); Sharpe, Hand-l. B. i. p. 234 (1899); Reichen. Vög. Afrikas, i. p. 93 (1900).

Rotifunk, November 1902.

Bo, April 1904.

19. **Plotus rufus.**

Plotus rufus Daud.; Grant, Cat. B. xxvi. p. 412 (1898); Sharpe, Hand-l. B. i. p. 236 (1899).

Anhinga rufa Reichen. Vög. Afrikas, i. p. 95 (1900).

Rotifunk, November 1902.

20. **Polyboroides typicus.**

Polyboroides typicus Smith; Sharpe, Cat. B. i. p. 48 (1874); id. Hand-l. B. i. p. 244 (1899); Reichen. Vög. Afrikas, i. p. 531 (1901).

Moyamba, August 1902. Iris, bill, and claws black; feet and face lemon-yellow; bare skin round the nostrils pale violet flesh-coloured.

Bo, May and August 1903 and February 1904.

Gerihun, August 1903.

The specimen obtained in February was found robbing, one after another, the nests of *Hyphantornis cucullatus*, inserting its bill into each nest. While acting thus the Hawk is able to hover without using its feet, after the manner of a Humming-bird.

21. **Astur macroscelides.**

Astur castanilius pt. Sharpe, Hand-l. B. i. p. 248 (1899).

Astur tachiro castanilius Reichen. Vög. Afrikas, i. p. 554 (1901).

An adult bird from Mission Creek, Rotifunk, June 1902.

Two young birds from Bo, February and April 1904. Iris bluish grey and lemon-yellow; bill and claws black; cere, orbit, and feet lemon-yellow.

22. ASTUR SPHENURUS.

Astur sphenurus (Rüpp.); Sharpe, Cat. B. i. p. 112 (1874): id. Hand-l. B. i. p. 249 (1899); Reichen. Vög. Afrikas, i. p. 557 (1901).

Bo, January and February 1904. Irides, eyelids, and feet chrome-yellow; cere chrome-yellow; bill bluish slate-coloured, blue-black at tip; claws black.

23. ACCIPITER BUETTIKOFERI.

Accipiter buettikoferi Sharpe, Notes Leyden Mus. x. p. 199 (1888); id. Hand-l. B. i. p. 253 (1899).

Accipiter hartlaubi Reichen. Vög. Afrikas, i. p. 564 (1901).

Bo, May 1903. Irides crimson; eyelids, cere, eyebrows, and feet scarlet-orange; claws bluish black.

Bo, March and May 1904.

This is not an uncommon Hawk here, but is far less frequently seen than *Asturinula monogrammica*. Two obtained on the 5th of May were an undoubted pair, and were commencing to build in a large cottonwood-tree on the outskirts of the town at that date. The hen, upon dissection, proved to be almost ready to lay.

Only a few specimens of this Hawk seem to have been obtained hitherto, viz. by Büttikofer in Liberia. Its occurrence therefore at Bo, which is about a hundred miles from the Liberian frontier, considerably extends its known range.

24. ASTURINULA MONOGRAMMICA.

Asturinula monogrammica (Temm.); Sharpe, Cat. B. i p. 275 (1874); id. Hand-l. B. i. p. 264 (1899).

Kaupifalco monogrammicus Reichen. Vög. Afrikas, i. p. 547 (1901).

Rotifunk, April 1902. Irides dark amber; beak and claws black; eyelids, cere, and feet orange.

Bo: May, June, and July 1903.

Very plentiful.

25. GYPOHIERAX ANGOLENSIS.

Gypohierax angolensis (Gm.); Sharpe, Cat. B. i. p. 312 (1874); id. Hand-l. B. i. p. 267 (1899); Reichen. Vög. Afrikas, i. p. 603 (1901).

Moyamba, August 1902.

26. MILVUS ÆGYPTIUS.

Milvus ægyptius (Gm.); Sharpe, Cat. B. i. p. 320 (1874): id. Hand-l. B. i. p. 268 (1899); Reichen. Vög. Afrikas, i. p. 609 (1901).

Bo, May and September 1903. Irides dark hazel; cere, eyelids, and feet deep chrome-yellow; claws black.

In the Mendi folk-lore, of which there is a good supply, this bird is reputed to have once seized a native baby, and as a punishment to have been condemned to remain always on the wing. This story, coupled with its liking for fowls, makes it very unpopular, and if one falls to the gun, every child, boy and girl alike, runs up to beat the bird soundly. In a village quite a crowd will collect to punish the bird thus.

27. ELANUS CÆRULEUS.

Elanus cæruleus (Desf.); Sharpe, Cat. B. i. p. 336 (1874); id. Hand-l. B. i. p. 269 (1899); Reichen. Vög. Afrikas, i. p. 615 (1901).

Rotifunk, November 1902.

This Hawk is not plentiful at Bo, but is more abundant at Rotifunk, while further towards the coast in the neighbourhood of Freetown it is common.

28. BAZA CUCULOIDES.

Baza cuculoides (Sw.); Sharpe, Cat. B. i. p. 354 (1874); id. Hand-l. B. i. p. 271 (1899); Reichen. Vög. Afrikas, i. p. 618 (1901).

♀. Bo, October 1904. Irides and feet deep chrome-yellow; beak and claws black; cere and eyelids dull yellow.

29. HUHUA POENSIS.

Bubo poensis Fraser; Sharpe, Cat. B. ii. p. 42 (1875); Reichen. Vög. Afrikas, i. p. 657 (1901).

Huhua poensis Sharpe, Hand-l. B. i. p. 284 (1899)

Mano, on the Taia River, January 1904.

30. BUBO LEUCOSTICTUS.

Bubo leucostictus Hartl.; Sharpe, Cat. B. ii. p. 41 (1875); Reichen. Vög. Afrikas, i. p. 658 (1901).

Hukua leucosticta Sharpe, Hand-l. B. i. p. 284 (1899).

Mano, on the Taia River, January 1904.

31. SCOPS LEUCOTIS.

Scops leucotis (Temm.); Sharpe, Cat. B. ii. p. 97 (1875): id. Hand-l. B. i. p. 287 (1899).

Asio leucotis Reichen. Vög. Afrikas, i. p. 661 (1901).

Hangha, April 1904, immature. Beak, feet, and claws whitish slate-blue; eyes black, with a golden ring.

32. SYRNIUM NUCHALE.

Syrnium nuchale Sharpe, Cat. B. ii. p. 294 (1875); id. Hand-l. B. i. p. 294 (1899); Reichen. Vög. Afrikas, i. p. 670 (1901).

Rotifunk, September 1902.

Bo, May 1903 and March and June 1904.

This is quite a common Owl, and is often caught alive by the natives.

33. STRIX MACULATA.

Strix maculata Brehm, Naum. 1858, p. 220.

Strix flammea L. pt.; Sharpe, Cat. B. ii. p. 290 (1875); id. Hand-l. B. i. p. 300 (1899).

Strix flammea maculata Brehm; Reichen. Vög. Afrikas, i. p. 676 (1901).

Rotifunk, September 1902. This specimen was brought in alive by natives and lived four weeks in captivity.

34. CORACIAS SENEGALENSIS.

Coracias senegalensis (Gm.); Reichen. Orn. MB. 1899, p. 191; Sharpe, Hand-l. B. ii. p. 46 (1900).

Coracias abyssinicus senegalensis Reichen. Vög. Afrikas, ii. p. 221 (1902).

Kommendi, February 1904.

35. EURYSTOMUS AFER.

Eurystomus afer (Lath.); Sharpe, Cat. B. xvii. p. 30 (1892); id. Hand-l. B. ii. p. 47 (1900); Reichen. Vög. Afrikas, ii. p. 228 (1902).

Rotifunk, April and July 1902. Iris nearly black; bill bright yellow; feet flesh-coloured; claws dark.

Bo, January and February 1904.

Tikonko, February 1904.

36. EURYSTOMUS GULARIS.

Eurystomus gularis Vieill.; Sharpe, Cat. B. xvii. p. 32 (1892); id. Hand-l. B. ii. p. 47 (1900); Reichen. Vög. Afrikas, ii. p. 231 (1902).

Bo, May 1903.

Quite a rare bird.

37. ALCEDO QUADRIBRACHYS.

Alcedo quadribrachys Bp.; Sharpe, Cat. B. xvii. p. 157 (1892); id. Hand-l. B. ii. p. 51 (1900); Reichen. Vög. Afrikas, ii. p. 293 (1902).

Rotifunk, 1902; brought in alive by a native.

38. CORYTHORNIS CYANOSTIGMA.

Corythornis cyanostigma (Rüpp.); Sharpe, Cat. B. xvii. p. 167 (1892); id. Hand-l. B. ii. p. 52 (1900); Reichen. Vög. Afrikas, ii. p. 289 (1902).

Rotifunk, 1902; brought in alive by a native.

39. ISPIDINA PICTA.

Ispidina picta (Bodd.); Sharpe, Cat. B. xvii. p. 191 (1892); id. Hand-l. B. ii. p. 54 (1900); Reichen. Vög. Afrikas, ii. p. 286 (1902).

Rotifunk, 1902. Iris black; bill, feet, and claws vermilion.

Bo, April and May 1904.

40. HALCYON FORBESI.

Halcyon forbesi Sharpe, Cat. B. xvii. p. 247, pl. vi. fig. 2 (1892); id. Hand-l. B. ii. p. 57 (1900).

Halcyon torquatus forbesi Reichen. Vög. Afrikas, ii. p. 280 (1902).

Irides nearly black; upper mandible scarlet; lower mandible and claws black; feet scarlet.

41. HALCYON SENEGALENSIS.

Halcyon senegalensis (L.); Sharpe, Cat. B. xvii. p. 242 (1892); id. Hand-l. B. ii. p. 57 (1900); Reichen. Vög. Afrikas, ii. p. 282 (1902).

A series of skins from Rotifunk and Bo. Iris dark brown; upper mandible scarlet; lower mandible, feet, and claws black.

Very common and known as the "Telegraph-bird," from its habit of perching on the telegraph-wire. It is resident throughout the year.

42. HALCYON SEMICÆRULEUS.

Halcyon semicæruleus (Forst.); Sharpe, Cat. B. xvii. p. 232 (1892); id. Hand-l. B. ii. p. 57 (1900); Reichen. Vög. Afrikas, ii. p. 276 (1902).

Baoma, January 1904. Eyes black; bill and feet scarlet; claws black.

Jagbamah, February 1904.

Bo, February and March 1904.

This species is not so common as *H. senegalensis*.

43. CERATOGYMNA ELATA.

Ceratogymna elata (Temm.); Grant, Cat. B. xvii. p. 388 (1892); Sharpe, Hand-l. B. ii. p. 66 (1900); Reichen. Vög. Afrikas, ii. p. 238 (1902).

Moyamba, 1902.

44. LOPHOCEROS SEMIFASCIATUS.

Lophoceros semifasciatus (Hartl.); Grant, Cat. B. xvii. p. 401 (1892); Sharpe, Hand-l. B. ii. p. 67 (1900); Reichen. Vög. Afrikas, ii. p. 247 (1902).

A series of skins from Rotifunk (1902) and Bo (1903).

Resident throughout the year and common in some localities.

45. MELITTOPHAGUS PUSILLUS.

Melittophagus pusillus (P. L. S. Müll.); Sharpe, Cat. B. xvii. p. 47 (1892); id. Hand-l. B. ii. p. 72 (1900); Reichen. Vög. Afrikas, ii. p. 305 (1902).

Rotifunk, April 1902. Very uncommon.

46. MELITTOPHAGUS GULARIS.

Melittophagus gularis Sharpe, Cat. B. xvii. p. 51 (1892); id. Hand-l. B. ii. p. 73 (1900); Reichen. Vög. Afrikas, ii. p. 312 (1902).

Tikonko, February. Irides scarlet; bill black; feet and claws dark slate-coloured.

Bo: February, March, April, May, and August.

These Bee-eaters leave the country in May, and return about the middle of August in more ragged plumage than when they are departing. They are not nearly so numerous as *Merops albicollis*, but still they are common.

47. MEROPS ALBICOLLIS.

Merops albicollis Vieill.; Sharpe, Cat. B. xvii. p. 76 (1892); id. Hand-l. B. ii. p. 74 (1900).

Aerops albicollis Reichen. Vög. Afrikas, ii. p. 317 (1902).

Rotifunk, March 1902. Irides blood-red; bill black; feet greenish.

Bo, January 1904.

This is the commonest of our Bee-eaters, and can generally be seen in considerable numbers about every town. It leaves in April, flocking after the manner of Swallows, and returns again in November, being away during the entire rainy season.

48. MACRODIPTERYX LONGIPENNIS.

Macrodipteryx longipennis (Shaw); Sharpe, Hand-l. B. ii. p. 74 (1900).

Macrodipteryx macrodipterus Afzel.; Hartert, Cat. B. xvi. p. 594 (1892); Reichen. Vög. Afrikas, ii. p. 370 (1902).

Bo, June 1903 and January 1904. Iris black.

When at rest the plumes of the full-plumaged cock lie flat upon the ground at the side of the tail and extend beyond it, and do not, as has been supposed by some authors, stand up more or less vertically or stick out at right angles to the plane of the wing. Similarly, when the birds are soaring in the air the feathers point backwards, but when the birds are actually flying and beating with the wing the streamers bend upwards and flutter and flap about above the bird.

49. SCOTORNIS CLIMACURUS.

Scotornis climacurus Vieill.; Hartert, Cat. B. xvi. p. 594 (1892); Sharpe, Hand-l. B. ii. p. 82 (1900); Reichen. Vög. Afrikas, ii. p. 368 (1902).

Rotifunk, 1902.

Bo, September 1903, January and July 1904.

The natives will on no account handle any Nightjar, looking upon them as "devil-birds," and stoutly aver that sickness will come upon them or their relatives if they so much as utter this bird's name.

50. TURACUS BUFFONI.

Turacus buffoni Vieill.; Shelley, Cat. B. xix. p. 438 (1891): Sharpe, Hand-l. B. ii. p. 152 (1900); Reichen. Vög. Afrikas, ii. p. 55 (1902).

Bo: May, June, and October 1903, and March 1904. Irides dark hazel; bill dull blood-red; orbit scarlet; feet and claws black.

This Touraco probably breeds in May and June, as a hen obtained in the latter month contained in its ovary an almost fully developed egg.

51. TURACUS MACRORHYNCHUS.

Turacus macrorhynchus (Fraser); Shelley, Cat. B. xix. p. 441 (1891); Sharpe, Hand-l. B. ii. p. 153 (1900); Reichen. Vög. Afrikas, ii. p. 48 (1902).

Moyamba, July 1902.

52. CORYTHÆOLA CRISTATA.

Corythæola cristata (Vieill.); Shelley, Cat. B. xix. p. 449 (1891); Sharpe, Hand-l. B. ii. p. 154 (1900); Reichen. Vög. Afrikas, ii. p. 26 (1902).

Moyamba, 1902.

53. SCHIZORHIS AFRICANA.

Schizorhis africana (Lath.); Shelley, Cat. B. xix. p. 450 (1891); Sharpe, Hand-l. B. ii. p. 155 (1900); Reichen. Vög. Afrikas, ii. p. 30 (1902).

Bo, September 1903. Bill chrome-yellow.

54. COCCYSTES CAFER.

Coccystes cafer (Licht.); Shelley, Cat. B. xix. p. 221 (1891); Sharpe, Hand-l. B. ii. p. 156 (1900); Reichen. Vög. Afrikas, ii. p. 76 (1902).

Bo: January, February, and March 1904. Bill and claws black; feet bluish slate-coloured.

Mano, February 1904.

55. CUCULUS CLAMOSUS.

Cuculus clamosus Lath.; Shelley, Cat. B. xix. p. 260 (1891); Sharpe, Hand-l. B. ii. p. 159 (1900); Reichen. Vög. Afrikas, ii. p. 86 (1902).

Bo, May and August 1903. Irides very dark hazel.

56. CHRYSOCOCCYX CUPREUS.

Chrysococcyx cupreus (Bodd.); Shelley, Cat. B. xix. p. 285 (1891); Sharpe, Hand-l. B. ii. p. 161 (1900); Reichen. Vög. Afrikas, ii. p. 94 (1902).

♂. Bo, August 1904. Irides and eyelids coral-vermilion; upper mandible nearly black, lower mandible flesh-coloured; feet and claws bluish slate-coloured.

57. CENTROPUS SENEGALENSIS.

Centropus senegalensis (L.); Shelley, Cat. B. xix. p. 360 (1891); Sharpe, Hand-l. B. ii. p. 168 (1900); Reichen. Vög. Afrikas, ii. p. 58 (1902).

A series of skins from Rotifunk and Bo. Irides crimson; bill, feet, and claws black.

Resident throughout the year and without doubt the most common bird of its size. The natives say that it places snakes round its nest to keep away intruders.

58. CEUTHMOCHARES FLAVIROSTRIS.

Ceuthmochares flavirostris (Swains.); Shelley, Cat. B. xix. p. 401 (1891); Sharpe, Hand-l. B. ii. p. 172 (1900); Reichen. Vög. Afrikas, ii. p. 72 (1902).

Rotifunk, June 1902. Bill, face, and eyelids bright yellow; iris blood-red; feet blue-black.

Bo, June 1903 and April 1904.

59. BARBATULA SCOLOPACEA.

Barbatula scolopacea (Temm.); Sharpe, Hand-l. B. ii. p. 182 (1900); Reichen. Vög. Afrikas, ii. p. 144 (1902).

Bo, July and August 1903. Irides golden; bill black; feet and claws dark slate-coloured.

Bo, March 1904.

60. TRACHYLÆMUS GOFFINI.

Trachyphonus goffini Schl.; Shelley, Cat. B. xix. p. 106.

Trachylæmus goffini (Schl.); Sharpe, Hand-l. B. ii. p. 187 (1900); Reichen. Vög. Afrikas, ii. p. 160 (1902).

♂. Bo, March 1904. Eyes dark crimson; bill deep chrome; feet and claws bluish slate-coloured.

61. DENDROMUS MACULOSUS.

Campothera maculosa (Val.); Hargitt, Cat. B. xviii. p. 104 (1890); Sharpe, Hand-l. B. ii. p. 206 (1900).

Dendromus maculosus Reichen. Vög. Afrikas, ii. p. 170 (1902).

Rotifunk and Bo.

62. DENDROMUS NIVOSUS.

Campothera nivosa (Sw.); Hargitt, Cat. B. xviii. p. 108 (1890); Sharpe, Hand-l. B. ii. p. 207 (1900).

Dendromus nivosus Reichen. Vög. Afrikas, ii. p. 169 (1902).

Rotifunk (1902) and Bo (1904).

63. MESOPICUS PYRRHOGASTER.

Mesopicus pyrrhogaster (Malh.); Hargitt, Cat. B. xviii. p. 373 (1890); Sharpe, Hand-l. B. ii. p. 223 (1900); Reichen. Vög. Afrikas, ii. p. 183 (1902).

Rotifunk, August 1902.

64. DENDROPICUS LUGUBRIS.

Dendropicus lugubris Hartl.; Hargitt, Cat. B. xviii. p. 305 1890); Sharpe, Hand-l. B. ii. p. 218 (1900); Reichen. Vög. Afrikas, ii. p. 200 (1902).

Tikonko, February 1904.

65. PITTA PULIH.

Pitta angolensis (nec V.); Sclater, Cat. B. xiv. p. 422 (1888); Sharpe, Hand-l. B. iii. p. 180 (1901); Reichen. Vög. Afrikas, ii. p. 390 (1903).

Pitta pulih Fraser; Finsch, Notes Leyden Mus. xxii. p. 211 (1903).

Bo: February, July, and August 1904. Iris black; bill brown; feet and claws pinkish flesh-coloured.

The Timane name of this bird is "Umpuhli," which signifies a "voluble talker." The Mendi name is "Sekwondi." It is a common species, frequently heard, but seldom seen.

66. DIAPHOROPHYIA CASTANEA.

Diaphorophyia castanea (Fras.); Sharpe, Cat. B. iv. p. 140 (1879); id. Hand-l. B. iii. p. 245 (1901); Reichen. Vög. Afrikas, ii. p. 490 (1903).

Tikonko, February 1904. Eye-wattles dirty dark red.

67. DIAPHOROPHYIA BLISSETTI.

Diaphorophyia blissetti Sharpe, Cat. B. iv. p. 141 (1879); id. Hand-l. B. iii. p. 245 (1901); Reichen. Vög. Afrikas, ii. p. 492 (1903).

Bo, April 1904. Iris and bill black; eyelids bright cobalt-blue; feet slate-coloured.

68. PLATYSTIRA CYANEA.

Platystira cyanea (P. L. S. Müll.); Sharpe, Cat. B. iv. p. 145 (1879); id. Hand-l. B. iii. p. 246 (1901); Reichen. Vög. Afrikas, ii. p. 488 (1903).

Rotifunk, November 1902

69. BIAS MUSICUS.

Bias musicus (V.); Sharpe, Cat. B. iv. p. 142 (1879); id. Hand-l. B. iii. p. 246 (1901); Reichen. Vög. Afrikas, ii. p. 469 (1903).

Bo: May and June 1903, February 1904. Irides and feet lemon-yellow; bill and claws black.

70. TCHITREA NIGRICEPS.

Terpsiphone nigriceps (Hartl.); Sharpe, Cat. B. iv. p. 359 (1879); id. Hand-l. B iii. p. 265 (1901).

Tchitrea nigriceps Reichen. Vög. Afrikas, ii. p. 511 (1903).

♂. Rotifunk, April 1902. Bill and eyelids sky-blue; irides black; feet and claws blue.

Bo, August 1903.

Tikonko, February 1904.

Bo: April, July, and August 1904.

The bill, eyelids, and feet change from blue to black in a few hours after death. The interior of the mouth is of a clear gamboge-yellow. This bird has a peculiar and not by any means unpleasant smell, which is retained for some weeks after it has been skinned.

71. TROCHOCERCUS REICHENOWI.

Trochocercus reichenowi Sharpe, Ibis, 1904, p. 630.

Bo, July 1904. Iris and upper mandible black; lower mandible, feet, and claws slaty-blue.

72. CAMPOPHAGA PHŒNICEA.

Campophaga phœnicea (Lath.); Sharpe, Cat. B. iv. p. 298 (1879); id. Hand-l. B. iii. p. 59 (1901); Reichen. Vög. Afrikas, ii. p. 521 (1903).

Bo, February 1904. Bill and feet black.

73. BLEDA CANICAPILLA.

Bleda canicapilla Sharpe, Hand-l. iii. p. 323 (1901); Reichen. Vög. Afrikas, iii. p. 385 (1904).

Bo, August 1903. Bill dark slate-coloured; feet and claws whitish slate-blue.

74. BLEDA SIMPLEX.

Bleda simplex (Hartl.); Sharpe, Hand-l. B. iii. p. 321 (1901).

Rotifunk, 1902.

Bo, July 1903.

75. EURILLAS VIRENS.

Eurillas virens (Cass.); Sharpe, Hand-l. B. iii. p. 324 (1901).

Andropadus virens Reichen. Vög. Afrikas, iii. p. 412 (1904).

76. Eurillas cameronensis.

Stelgidillas cameronensis (Reichen.); Sharpe, Hand-l. B. iii. p. 326 (1901).

Andropadus curvirostris Cass.; Reichen. Vög. Afrikas, iii. p. 413 (1904).

Bo, April and July 1903.

77. Stelgidillas gracilirostris.

Stelgidillas gracilirostris (Strickl.); Sharpe, Hand-l. B. iii. p. 326 (1901).

Andropadus gracilirostris Reichen. Vög. Afrikas, iii. p. 411 (1904).

Bo: August 1903; February, July, and August 1904. Irides blood-red; bill, feet, and claws black.

78. Pycnonotus inornatus.

Pycnonotus barbatus pt. Sharpe, Hand-l. B. iii. p. 331 (1901).

Pycnonotus barbatus inornatus Hartert, Nov. Zool. ix. p. 329 (1902).

Rotifunk, 1902.

Bo: June, July, and August, 1903 and 1904.

This bird, which is very common and resident throughout the year, is known by the name of "Tiprah" among the Timane tribe. This signifies "fond of pepper," the scarlet pods of which it greedily devours.

79. Turdinus fulvescens.

Turdinus fulvescens Sharpe, Hand-l. B. iv. p. 32 (1903).

Bo, October 1904.

80. Turdinus, sp. inc.

♀. Bo, March 1904. Eyes amber; upper mandible dull black, lower mandible slate-coloured; feet and claws pale flesh-coloured.

81. Amaurocichla kempi. (Plate V.)

Amaurocichla kempi Sharpe, Bull. B. O. C. xv. p. 38 (1905).

Similis *A. bocagei*, sed gutture pallidè cinereo et hypochondriis aurantiaco-rufis distinguenda. Long. tota 4·7 poll., culm. 0·8, alæ 2·3, tarsi 0·9.

Bo, April 1904. Iris golden-yellow; bill dark brown;

feet slate-coloured. [This is a second species of the curious long-billed genus *Amaurocichla*, of which the type, *A. bocagei*, from the island of St. Thomas (P. Z. S. 1892, p. 228, pl. xx. fig. 1), was previously the only one known.—R. B. S.]

82. MERULA CRYPTOPYRRHA.

Merula cryptopyrrha (Cab.); Sharpe, Hand-l. B. iv. p. 128 (1903).

Bo, March 1904. Bill yellow; iris dark hazel; feet and claws yellowish-drab.

83. ALETHE CASTANEA.

Alethe castanea (Cass.); Sharpe, Hand-l. B. iv. p. 168 (1903).

Bo, July 1903 and February 1904. Irides reddish-brown; bill black; feet and claws bluish slate-coloured.

84. SAXICOLA ŒNANTHE.

Saxicola œnanthe (L.); Sharpe, Hand-l. B. iv. p. 175 (1903).

Bo, February 1904. Eyes, bill, and feet black.

85. PRATINCOLA RUBETRA.

Pratincola rubetra (L.); Sharpe, Hand-l. B. iv. p. 171 (1903).

Bo: January, February, and April 1904. Eyes, feet, and claws black; bill nearly black.

86. MELOCICHLA MENTALIS.

Melocichla mentalis (Fraser); Sharpe, Hand-l. B. iv. p. 194 (1903).

A series of skins from Rotifunk and Bo.

87. CISTICOLA ERYTHROPS.

Cisticola erythrops (Hartl.); Sharpe, Hand-l. B. iv. p. 196 (1903).

Bo: April, May, and September 1903. Irides amber; bill black; eyelids sepia-brown; feet flesh-coloured; claws dark brown.

88. SYLVIA SIMPLEX.

Sylvia simplex (Lath.); Sharpe, Hand-l. B. iv. p. 209 (1903).

Bo, January and March 1904. Beak brownish slate-coloured; irides dark amber; feet and claws slate-coloured.

89. PHYLLOSCOPUS TROCHILUS.

Phylloscopus trochilus (L.); Sharpe, Hand-l. B. iv. p. 213 (1903).

Bo, February 1904. Iris black; bill brown; feet and claws brownish flesh-coloured.

90. CAMAROPTERA CONCOLOR.

Camaroptera concolor (Hartl.); Sharpe, Hand-l. B. iv. p. 232 (1903).

Bo, May and August 1903.

91. CAMAROPTERA TINCTA.

Camaroptera tincta Cass.; Sharpe, Hand-l. B. iv. p. 232 (1903).

Bo, April and July 1903.

92. HYLIA PRASINA.

Hylia prasina Cass.; Sharpe, Hand-l. B. iv. p. 234 (1903).

Bo, April 1904. Eyes and bill black; feet and claws green, as is the back.

93. PRINIA MYSTACEA.

Prinia mystacea Rüpp.; Sharpe, Hand-l. B. iv. p. 240 (1903).

Bo, July and August 1904. Iris amber; eyelids and feet flesh-coloured; bill black; claws dark brown.

94. FISCUS SMITHI.

Fiscus smithi (Fraser); Sharpe, Hand-l. B. iv. p. 284 (1903).

Lanius humeralis smithi Reichen. Vög. Afrikas, ii. p. 610 (1903).

Bo: April, May, June, August, and September, 1903 and 1904. Bill black; feet and claws dark slate-coloured; irides black.

Common and resident throughout the year. Breeds in May and June.

95. Malaconotus poliochlamys.

Malaconotus poliochlamys (Gadow); Sharpe, Hand-l. B. iv. p. 289 (1903).

Malaconotus cruentus (Less.); Reichen. Vög. Afrikas, ii. p. 604 (1903).

Bo, June 1903 and March 1904. Irides bluish grey, like the crown; eyelids and bill black; feet and claws bluish slate-coloured.

96. Chaunonotus sabinii.

Chaunonotus sabinei (Gray); Sharpe, Hand-l. B. iv. p. 298 (1903); Reichen. Vög. Afrikas, ii. p. 598 (1903).

Bo, July 1904. Iris dark brown; bill, feet, and claws slaty-blue.

97. Nicator chloris.

Nicator chloris (Less.); Sharpe, Hand-l. B. iv. p. 299 (1903); Reichen. Vög. Afrikas, ii. p. 551 (1903).

Bo: August 1903, March 1904. Bill black; feet bluish slate-coloured.

This bird is known among the natives by a name which means "Leopard-bird," from the spots on its sides.

98. Pomatorhynchus senegalus.

Pomatorhynchus senegalus (L.); Sharpe, Hand-l. B. iv. p. 299 (1903); Reichen. Vög. Afrikas, ii. p. 547 (1903).

Rotifunk, 1902.

Bo: May, June, August, and September 1903; March 1904.

99. Pomatorhynchus ussheri.

Pomatorhynchus ussheri (Sharpe); Sharpe, Hand-l. B. iv. p. 300 (1903).

Pomatorhynchus humeralis ussheri Reichen. Vög. Afrikas, ii. p. 545 (1903).

Rotifunk (1902) and Bo (1903).

A very much scarcer bird than *P. senegalus*.

100. Chlorophoneus multicolor.

Chlorophoneus multicolor (Gray); Sharpe, Hand-l. B. iv. p. 290 (1903); Reichen. Vög. Afrikas, ii. p. 565 (1903).

Bo, July 1903. Eyelids and bill black; feet and claws bluish slate-coloured.

101. LANIARIUS LEUCORHYNCHUS.

Laniarius leucorhynchus (Hartl.); Sharpe, Hand-l. B. iv. p. 295 (1903); Reichen. Vög. Afrikas, ii. p. 573 (1903).

Bo, June 1904. Iris, bill, feet, and claws black.

102. SIGMODUS CANICEPS.

Sigmodus caniceps Bp.: Sharpe, Hand-l. B. iv. p. 271 (1903); Reichen. Vög. Afrikas, ii. p. 537 (1903).

Tikonko, February 1904. Bill, feet, claws, and eyelids scarlet-vermilion.

Bo, March 1904.

103. ZOSTEROPS SENEGALENSIS.

Zosterops senegalensis Bp.; Shelley, B. Africa, ii. p. 173 (1900).

A series of skins from Bo: February, April, June, July, and August 1904. Bill and feet slate-coloured; eye-rings white.

This bird is very common.

104. CINNYRIS CUPREUS.

Cinnyris cupreus (Shaw); Shelley, B. Africa, ii. p. 36 (1900).

Bo: February, June, July, August, September, and October. Bill, feet, and claws black.

This Sun-bird is now recorded for the first time from Sierra Leone, where it is resident during the months of rain, from June onwards, frequenting the tallest forest-trees and bush. It is usually seen singly, and is the most noisy of the Sun-birds, making its visits to the banana-bunches in our compound at Bo at once known by its chattering song. On the 31st of July, 1904, I observed a bird of this species hawking for insects late in the evening during heavy rain, and it evidently caught the insects while on the wing. It was accompanied in this occupation by five examples of *Pycnonotus barbatus*, one of *Fiscus smithi*, and two pairs of *Penthetriopsis macrurus*.

105. CINNYRIS JOHANNÆ.

Cinnyris johannæ Verr.; Shelley, B. Africa, ii. p. 43 (1900).

Bo, March 1904. Iris, bill, and feet black.

I have seen these Sun-birds at Freetown in June, while at Bo they haunted the tallest flowering trees in preference to the smaller trees, which are the haunts of most of the other Sun-birds.

106. CINNYRIS CHLOROPYGIUS.

Cinnyris chloropygius (Jard.); Shelley, B. Africa, ii. p. 83 (1900).

Tungie Bridge, June 1903. Bill brown; eyes black; feet and claws slaty-blue.

Bo, January to May and August 1904.

I procured a good series of this species.

107. CYANOMITRA VERTICALIS.

Cyanomitra verticalis (Lath.); Shelley, B. Africa, ii. p. 127 (1900).

♀. Rotifunk, May 1902. Iris, bill, and feet black.

♂ ♀. Bo, April 1904.

In the pigeon-English of this country all the Sun-birds are known as "Banana-suckers." To *C. verticalis*, however, this name applies more correctly than to any of the others, as it seems never to be far from a clump of either bananas or plantains; while the other Sun-birds are as frequently seen on other kinds of trees or bushes as on bananas.

108. CYANOMITRA OBSCURA.

Cyanomitra obscura (Jard.); Shelley, B. Africa, ii. p. 125 (1900).

Rotifunk, 1902.

Bo: January, February, July, August, and September. Iris, bill, feet, and claws black.

Perhaps the most common of the Sun-birds with us. In July it is generally seen in the neighbourhood of the bananas, on which the bunches of fruit attract it.

I have made coloured drawings of many of the flowering trees and bushes which are favourites of the Sun-birds, and hope to be able to name them in due course.

109. ANTHOTHREPTES HYPODILA.

Anthothreptes hypodila (Jard.); Shelley, B. Africa, ii. p. 151 (1900).

Mission Creek, Rotifunk, April 1902. Bill, feet, and claws black.

Bo: February, March, July, August, and September 1904.

A series of some twenty skins was obtained. This bird is quite common, and usually flits about in parties of from four to six.

110. MOTACILLA FLAVA.

Motacilla flava Linn.: Shelley, B. Africa, ii. p. 286 (1900).

Bo: January, September, and October 1904. Iris black; bill, feet, and claws very dark slate-coloured.

This Wagtail only remains here for the dry season, putting in its appearance at the close of the rains in September.

111. ANTHUS TRIVIALIS.

Anthus trivialis (Linn.); Shelley, B. Africa, ii. p. 299 (1900).

Bo, February 1904. Upper mandible brown; lower mandible, feet, and claws flesh-coloured.

112. ANTHUS PYRRHONOTUS.

Anthus pyrrhonotus Vieill.; Sharpe, Cat. B. x. p. 555 (1885).

Anthus gouldi Fraser; Shelley, B. Africa, ii. p. 307 (1900).

Bo, September 1904.

113. MACRONYX CROCEUS.

Macronyx croceus (Vieill.); Reichen. Vög. Afrikas, iii. p. 321 (1904).

Bo: January, February, September, and October.

Not numerous anywhere, but one or two pairs may generally be found in certain places which are to some extent less overgrown with bush than others. They frequently perch on the upper twigs of the trees thirty or forty feet high, and I have seen them sitting on the telegraph-wires by the railway-line.

114. Vidua serena.

Vidua serena (Linn.); Reichen. Vög. Afrikas, iii. p. 217 (1904); Shelley, B. Africa, iv. pt. 1, p. 16 (1905).

A series of skins from Bo: May, June, July, August, and September 1903.

A very common bird.

115. Penthetriopsis macrurus.

Coliuspasser macroura (Gm.); Reichen. Vög. Afrikas, iii. p. 138 (1904).

Coliuspasser macrourus, Shelley, B. Africa, iv. pt. 1, p. 49 (1905).

A series of skins from Bo: January, March, April, May, June, July, August, September, and October. 1903 and 1904.

116. Pyromelana afra.

Pyromelana afra (Gm.); Reichen. Vög. Afrikas, iii. p. 116 (1904); Shelley, B. Africa, iv. pt. 1, p. 80 (1905).

Rotifunk, October 1902. One specimen only obtained.

117. Pyromelana flammiceps.

Pyromelana flammiceps (Swains.); Reichen. Vög. Afrikas, iii. p. 118 (1904); Shelley, B. Africa, iv. pt. 1, p. 104 (1905).

A series of skins from Rotifunk and Bo: March, July, August, September, and October.

These Weaver-birds, which are here called "Soldier-birds" or "Christmas-birds," are numerous from early in August to December. During the remainder of the year they are much scarcer. A male obtained on the 10th of July, in a rice-plantation, shews just the beginning of the change from the "out of colour" phase to the brilliant "colour" plumage. A month after this, *i. e.* by the 10th of August, every cock is in full colour, and very gay they look, set off by the fresh green of the rice.

118. Quelea erythrops.

Quelea erythrops (Hartl.): Reichen. Vög. Afrikas, iii. p. 111 (1904); Shelley, B. Africa, iv. pt. 1, p. 117 (1905).

♂. Bo, September 1903. Iris nearly black; feet and claws flesh-coloured.

119. PYRENESTES COCCINEUS.

Pyrenestes coccineus Cass.; Shelley, B. Africa, iv. pt. 1, p. 282 (1905).

Pyrenestes ostrinus (Vieill.); Reichen. Vög. Afrikas, iii. p. 106 (1904).

Rotifunk, October. Iris very dark crimson; skin of upper and under eyelids white; bill blue-black; feet and claws dirty flesh-coloured.

Jagbamah, August and September.

Bo, August and September.

A series of sixteen skins, which shew clearly the characters of the male and female—the most marked difference being the crimson arch which extends further down the breast of the cock than of the hen. The most noticeable point about this bird when alive is the very conspicuous pair of upper and under eyelids of perfectly white skin, which gives it a spectacled appearance. After death, these eyelids soon become almost invisible.

This bird's habits closely resemble those of *Lagonosticta polionota*, and it haunts the same swamps and farms as *Spermospiza hæmatina*. It is wily in the extreme, and when it moves from one part of the swamp to another rises high in the air, and then flies very quickly with many twists and undulations. The only practicable way of obtaining specimens is to discover a farm frequented by them, and then to set a great many snares amongst the young rice. Both this species and *Spermospiza hæmatina* find their way into the snares in more or less equal numbers. A hen obtained on the 22nd August, which contained an egg, would seem to indicate August and September as the breeding-months.

120. AMAURESTHES FRINGILLOIDES.

Spermestes fringilloides (Lafr.); Shelley, B. Africa, iv. pt. 1, p. 160 (1905).

Amauresthes fringilloides Reichen. Vög. Afrikas, iii. p. 155 (1904).

A series of skins from Rotifunk (1902) and one from Bo (1904). Iris and upper mandible black; lower mandible bluish slate-coloured; feet and claws blue-black.

Quite common at Rotifunk, but a rare bird at Bo. At Rotifunk there exists a large colony of these birds, roosting and nesting in mango-, lime-, and orange-trees in the enclosed compound which contains our bungalows. They appear to be very local. At Rotifunk they associate with *Spermestes cucullatus,* but at Bo, which is further towards the interior, they are replaced by *S. bicolor* in this association. In two years of observation at Bo I have only once seen this bird, when three were together on a previous year's rice-farm.

121. SPERMESTES CUCULLATUS.

Spermestes cucullatus Swains.; Reichen. Vög. Afrikas, iii. p. 149 (1904); Shelley, B. Africa, iv. pt. 1, p. 167 (1905).

A series of skins from Rotifunk and Bo.

These are the most numerous Manikins and are resident here throughout the year. In the rainy season they are frequent companions of *S. bicolor, Estrilda occidentalis, E. subflava,* and the hens and young cocks of *Vidua principalis.* The nests are more or less spherical, built from the middle of August to February in small thick bushes, bananas, lime-trees, the palm-leafed roofs of huts, or any other convenient place, and usually contain five eggs of a dirty white. During the rains the birds roost in their nests. Oftentimes a nest will be packed with five or six of them, which can be captured at night with a butterfly-net and a lantern.

122. SPERMESTES BICOLOR.

Spermestes bicolor (Fraser); Reichen. Vög. Afrikas, iii. p. 151 (1904); Shelley, B. Africa, iv. pt. 1, p. 162 (1905).

A series from Bo. Bill lavender-blue; eyes, feet, and claws black.

Resident throughout the year and a frequent companion of *Spermestes cucullatus,* spending the day in the rice-farm clearings. At Rotifunk I never observed these Manikins, whilst at Bo and its neighbourhood they are common.

123. HYPARGUS SCHLEGELI.

Hypargos schlegeli (Sharpe); Reichen. Vög. Afrikas, iii. p. 159 (1904).

Hypargos nitidulus (Hartl.); Shelley, B. Africa, iv. pt. 1, p. 242 (1905).

Bo, July (♂ ♂ ♀ ♀) and August (♂ ♂) 1904. Eyes and base of bill black, remainder of beak scarlet; feet and claws flesh-coloured. There is more black at the base of the bill in the female than in the male.

These birds are fond of rice-farm swamps, go about in in pairs, and do not fly much or far.

124. MALIMBUS MALIMBICUS.

Malimbus malimbicus (Daud.); Reichen. Vög. Afrikas, iii. p. 21 (1904).

♂. Bo, August 1904. Eyes, bill, feet, and claws black.

125. MALIMBUS BARTLETTI.

Malimbus rubricollis bartletti Sharpe; Reichen. Vög. Afrikas, iii. p. 20 (1904).

Rotifunk, 1902. Irides, bill, feet, and claws black.

Bo: July, August, and October 1903; February, March, and August 1904.

This species appears to be recorded for the first time from Sierra Leone, where it is fairly common. An immature bird obtained in August seems to shew that July is a breeding-month.

126. MELANOPTERYX ALBINUCHA.

Ploceus albinucha (Bocage); Reichen. Vög. Afrikas, iii. p. 52 (1904).

A series of skins from Bo. Iris pearly-white; bill black; feet and claws dirty flesh-coloured.

The previously known range was Liberia to the Niger.

All the specimens came from one large tree in the Mission-ground, which is on the outskirts of the town.

127. HYPHANTORNIS BRACHYPTERUS.

Ploceus ocularis brachypterus Swains.; Reichen. Vög. Afrikas, iii. p. 47 (1904).

Rotifunk, 1902. Irides pearly-white; feet bluish slate-coloured.

Bo: July and September 1903; January and February 1904.

These birds were common both at Rotifunk and Bo, at the former place roosting in the lime- and mango-trees. They were much lighter sleepers than *Spermestes cucullatus* or *S. fringilloides,* which roosted in an adjoining tree, and when aroused at night the flutter of their many wings against the leaves made a noise like a waterfall. A palm-tree in the station-yard bore considerably over one hundred of their nests and was the scene of great excitement in the morning and evening. During and after the rains these Weaver-birds sometimes assemble in large flocks and fly together after the manner of Starlings, turning and twisting in the air, shewing now yellow, now green, and again becoming invisible.

128. HYPHANTORNIS CUCULLATUS.

Ploceus cucullatus (Müll.); Reichen. Vög. Afrikas, iii. p. 59 (1904).

A large series from Bo: April, May, June, August, and September 1903. Irides brick-red; bill slate-coloured; feet and claws flesh-coloured.

A coarse and noisy bird, doing great destruction in the rice-farms. It commences building in August and continues either building or patching its nest throughout September and into October. The nesting-colonies are always near a town or village or some busy place like a railway-station. There are many hundreds of their nests made of fibres, which they pull from banana-leaves, built in the large trees in the town of Bo; and though the birds are generally there in numbers, the great bulk of them go away occasionally for several days together. They fly, usually in parties of from twenty to fifty, from the large trees to some neighbouring rice-clearing, their flight being rapid and strong, while the whirr of their wings can be heard at some distance. They quite ignore the native efforts at bird-scaring for the protection of the rice-crops.

129. CINNAMOPTERYX CASTANEOFUSCUS.

Ploceus castaneofuscus Less.; Reichen. Vög. Afrikas, iii. p. 53 (1904).

Bo, February (immature ♂) and October (♀ ♀) 1904. Bill, feet, and claws of immature male flesh-coloured.

The two hens had pendent nests in very high grass ready for eggs on October 2nd, 1904. One had already deposited an egg, which is of much the same colour as that of an English Starling and, similarly, without markings. The two nests were not many yards from each other and from a nest of *Pyromelana flammiceps*.

130. CINNAMOPTERYX TRICOLOR.

Cinnamopteryx tricolor (Hartl.); Sharpe, Cat. B. xiii. p. 471 (1890).

A series of skins from Bo: March, April, May, June, August, and September. Irides and bill black; feet and claws bluish flesh-coloured.

A colony of these birds inhabited a large tree in the Mission-ground at Bo. They foraged about the thicker parts of the bush or forest for the greater part of the day, returning towards sundown to the same tree, making a great chattering and disturbance.

131. ESTRILDA OCCIDENTALIS.

Estrilda occidentalis Fraser & Jard.; Shelley, B. Africa, iv. pt. 1, p. 200 (1905).

Bo: May, June, July, and August. Bill waxy scarlet; feet and claws sepia-brown.

A series of some twenty-four skins.

Not recorded before north of Fernando Po.

Four specimens taken to England in 1903 differ considerably from the cabinet-specimens in the British Museum. With this larger series it may be necessary to consider the form a separate species or subspecies. This series shews a great preponderance of cocks over hens.

In August and September they are quite numerous at Bo in some small patches of feathery grass which is in seed at the time, and is cultivated by the natives for food. They settle in these patches of grass, which the natives call "Fundie," in compact little flocks with other Waxbills, Manikins, and Whydahs, and feed upon the seeds, accompanied by a species of small rat. In September this and the two other species of Waxbill, which for some months have been going about in small flocks, cease to be gregarious and pair off, probably breeding in September and October.

132. ESTRILDA SUBFLAVA.

Estrilda subflava (Vieill.); Shelley, B. Africa, iv. pt. 1, p. 207 (1905).

Jagbamah, August. Irides and beak crimson; feet and claws flesh-coloured.

Bo, August and September.

A series of twenty skins of this Weaver-Finch, which appear to be the first recorded from Sierra Leone. This species is rather less common than *E. occidentalis*.

133. ESTRILDA MELPODA.

Estrilda melpoda (Vieill.): Shelley, B. Africa, iv. pt. 1, p. 212 (1905).

A series of skins from Bo: February, July, and August 1904. Bill scarlet; iris black; feet and claws bluish flesh-coloured.

These Waxbills sometimes associate with the smaller Manikins.

134. LAGONOSTICTA POLIONOTA.

Lagonosticta polionota Shelley, Ibis, 1872, p. 141 (Cape Coast Castle): Reichen. Vög. Afrikas, iii. p. 200 (1904); Shelley, B. Africa, iv. pt. 1, p. 249 (1905).

Tungie Bridge, June. Iris black; eyelids pinkish; upper mandible dark slate-coloured; lower mandible and feet and claws bluish slate-coloured.

Bo: March, April, May, July, August, and September.

Finding that four specimens which I took home to England in 1903 differed considerably from those in the British Museum, I obtained in 1904 a series of some thirty skins, which distinctly shew the differences between the sexes and also those between the young and the adult.

These Fire-Finches are called by the Creoles here "Thunder-birds."

They are almost always seen in pairs, but sometimes two or more pairs will be feeding close to each other on the bare ground, if any, or in short grass by the roadside. A very favourite spot of theirs was our compound at Bo, after any part of it had been closely cut with the native cutlasses, thus exposing the earth and small grass-seeds. These birds are very shy and fly off to concealment at the approach of anyone, and then utter their rather peculiar call, a weak plaintive song. Both cocks and hens warble in this delicate way.

135. LAGONOSTICTA SENEGALA.

Lagonosticta senegala (Linn.); Shelley, B. Africa, iv. pt. 1, p. 256 (1905).

Rotifunk, 1902, only one skin. Eyelids bright yellow.

These birds roosted in the orange- and other trees in our compound at Rotifunk, where at night-time with a lantern they could be caught by the hand.

136. SPERMOSPIZA HÆMATINA.

Spermospiza hæmatina (Vieill.); Sharpe, Cat. B. xiii. p. 498 (1890).

Rotifunk, October. Iris dark blood-red; eyelid a circular ring of dull white skin, more noticeable in the cock than in the hen; bill metallic blue, changing to crimson at the tip; feet and claws nearly black. There are fine featherettes at the back of the neck in both sexes.

Jagbamah, August.

Bo: March, April, June, July, August, and September.

A series of some twenty skins.

The eyelids of this bird are somewhat similar to those of *Pyrenestes coccineus*, but are not nearly so conspicuous nor so well-defined as upper and under lids; neither are they of so pure a white. It frequents the same kind of swampy ground as *P. coccineus*, and is just as wary and difficult to see as that bird. From the dissection of the hens, I judge that they breed in August and September.

137. NIGRITA EMILIÆ.

Nigrita emiliæ Sharpe; Shelley, B. Africa, iv. pt. 1, p. 143 (1905).

Bo, January 1904. Irides reddish-gold; bill, feet, and claws black.

138. NIGRITA BICOLOR.

Nigrita bicolor (Hartl.); Shelley, B. Africa, iv. pt. 1, p. 139 (1905).

Bo, August 1904. Iris crimson; bill, feet, and claws black.

139. ANOMALOSPIZA IMBERBIS.

Anomalospiza imberbis (Cab.); Shelley, B. Africa, iv. pt. 1, p. 108, pl. xxxi. (1905).

♂. Bo, September 1903. Irides dark brown; upper mandible horn-coloured, lower mandible dirty flesh-coloured; feet and claws flesh-coloured.

This bird was caught by natives with bird-lime at the edge of a rice-farm. It is rare, but not so much so as to be unknown to the natives. All efforts to obtain more specimens or to get further information about it have, up to the time of writing, been fruitless.

140. LAMPROCOLIUS CUPREICAUDA.

Lamprocolius cupreicauda Hartl.; Sharpe, Cat. B. xiii. p. 184 (1890); Reichen. Vög. Afrikas, ii. p. 684 (1903).

♂. Bo, August 1903. Irides, bill, feet, and claws black.

I obtained this Glossy Starling from the summit of a large tree by the railway, half a mile west of Bo. It was by itself, late in the afternoon, and kept making a single, rather plaintive note. Since that time I have kept a sharp look-out for more specimens, but without success. It must therefore be considered to be only an occasional visitor.

141. ONYCHOGNATHUS HARTLAUBI.

Onycognathus hartlaubi Gray; Sharpe, Cat. B. xiii. p. 166 (1890).

Onychognathus hartlaubi Reichen. Vög. Afrikas, ii. p. 702 (1903).

Bo, February 1904. Irides crimson; bill, feet, and claws black.

142. CINNYRICINCLUS LEUCOGASTER.

Pholidauges leucogaster (Gm.); Sharpe, Cat. B. xiii. p. 121 (1890).

Cinnyricinclus leucogaster Reichen. Vög. Afrikas, ii. p. 679 (1903).

Bo, January 1904. Eyes bright yellow ring; bill black; feet and claws dark slate-coloured.

143. **Oriolus nigripennis.**

Oriolus nigripennis Verr.; Reichen. Vög. Afrikas, ii. p. 661 (1903).

♂ ♀. Bo, February 1904. Irides blood-red; bill reddish; feet and claws blue slate-coloured.

144. **Dicrurus afer.**

Dicrurus afer (Licht.); Reichen. Vög. Afrikas, ii. p. 646 (1903).

Bo, May and August 1903. Bill, feet, and claws black; irides blood-red.

145. **Corvus scapulatus.**

Corvus scapulatus Daud.; Reichen. Vög. Afrikas, ii. p. 634 (1903).

Rotifunk, 1902.

Bo, 1903.

Common at both places.

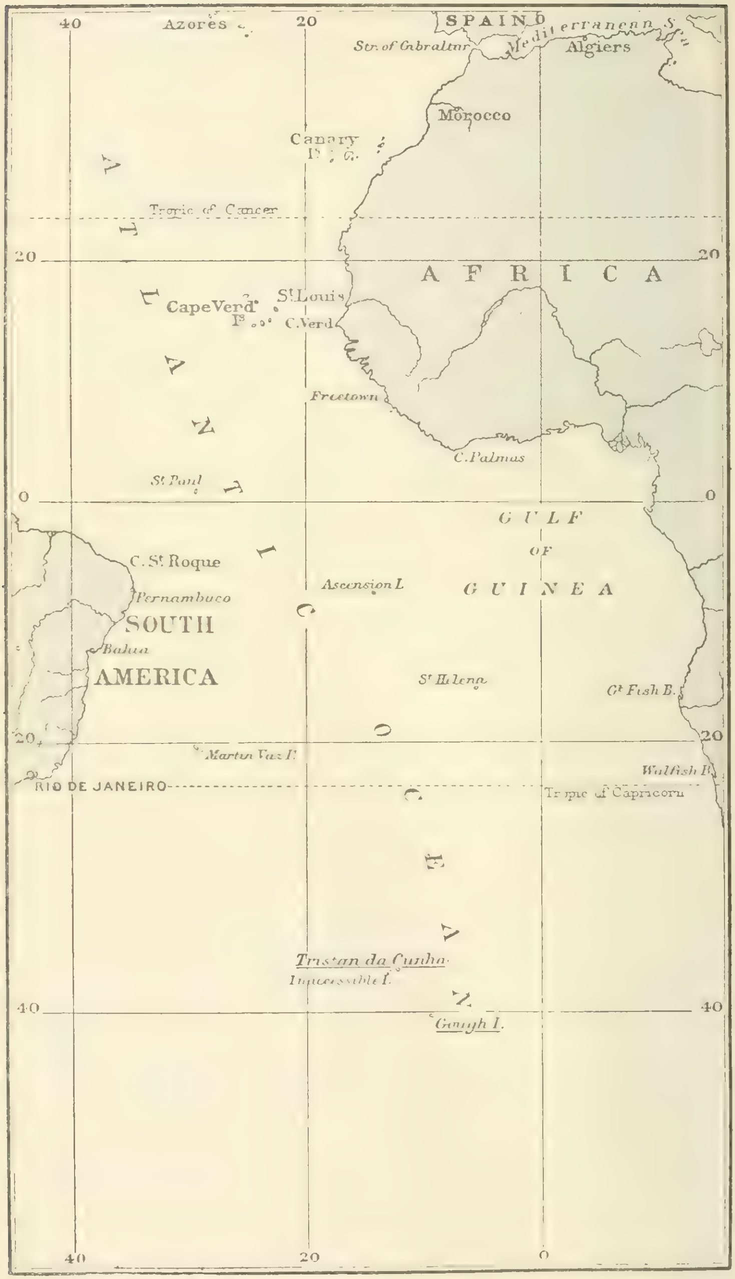
XXI.—*Ornithological Results of the Scottish National Antarctic Expedition.*—I. *On the Birds of Gough Island, South Atlantic Ocean.* By Wm. Eagle Clarke, F.R.S.E., F.L.S.

(Plate VI.)

When homeward bound from the farthest southern point reached—the newly discovered Coats-Land—the Scottish Antarctic Expedition paid a flying visit to Gough Island, and made the collection of birds here described. This contains forty-five specimens, and, with the Antarctic birds, has been placed in my hands for identification and record.

Gough Island, or, to speak more correctly, Diego Alvarez (for such it was named by its Portuguese discoverers), is situated in lat. 40° 19′ S. and long. 9° 44′ W. It lies far out in the South Atlantic Ocean, being some 1500

Text-fig. 16.


40
Azores
20
SPAIN
Str. of Gibraltar
Mediterranean Sea
Algiers
Morocco
Canary Is
C.
Tropic of Cancer
20
20
AFRICA
ATLANTIC OCEAN
St. Louis
Cape Verd Is
C. Verd
Freetown
C. Palmas
St. Paul
0
0
GULF OF GUINEA
C. St. Roque
Pernambuco
SOUTH AMERICA
Bahia
Ascension I.
St. Helena
Gt. Fish B.
20
20
Martin Vaz I.
Walfish B.
RIO DE JANEIRO
Tropic of Capricorn
Tristan da Cunha
Inaccessible I.
40
40
Gough I.
40
20
0

Outline Map showing the position of Gough Island.

miles W. by S. of the Cape of Good Hope and about 2000 miles N. by E. of Cape Horn; and, with the Tristan da Cunha group, which lie over 200 miles to the northwards, is among the most remote of all Oceanic islands. It is small and uninhabited; of volcanic origin; from seven to eight miles long, and from three to four wide; and is lofty, rising to a height of 4380 feet.

The island has been but little visited, except by sealers, who, in days gone by, found it worthy of their attention; and the 'Scotia's' party were the first naturalists who have ever set foot upon its fastnesses.

I greatly regret that owing to Mr. Bruce's breakdown in health his notes are not available for incorporation here, but I have to thank his colleagues, Dr. Harvey Pirie and Mr. R. N. Rudmose Brown, for the following description of the island, and also, with Mr. D. W. Wilton, for other valuable information:—

"Gough Island rises on every side abruptly from the ocean in sheer precipices several hundred feet high. The general aspect of the island, as seen from ship-board, is very beautiful, with its green slopes and moss- and lichen-covered cliffs, over which numbers of rushing waterfalls shoot out into the sea with a drop of several hundred feet. The only apparent landing-place is on the eastern side, where the party from the 'Scotia' landed. Here a ravine runs down from the interior to the coast and along it flows a small stream. Near the seaward end of this ravine are a few acres of level ground covered with grass or, in the moister parts, with ferns and rankly growing celery and docks. Here, too, is a narrow beach, perhaps a hundred yards long, strewn with many large boulders and numerous fern-rhizomes of considerable size. At the S.W. end of the island there appears to be a plateau of about half a square mile in extent at an elevation of some 300 feet, but everywhere else the island rises into steep ridges separated by narrow valleys, which must render its exploration a matter of extreme difficulty. On the lower ground and up to a height of over 1000 feet the island is thickly covered with tussock-grass (*Spartina arundinacea*) and buckthorn-trees (*Phylica nitida*): the former spread profusely over the steeper slopes, and the latter gnarled and stunted, yet growing vigorously even on the most exposed ridges.

Text-fig. 17.

Vegetation, Gough Island.

These trees appear hardly to rise beyond twenty feet in height and generally bear a thick growth of lichens on their stems. Under the waterfalls and along the sheltered banks of the streams ferns and mosses grow in luxuriance. More than the general aspect of the vegetation on the higher ground could not be determined, but the very summit of

Text-fig. 18.

RAVINE, GOUGH ISLAND.

the island seemed by its green appearance to be clothed with mosses and lichens."

To this description may be added a few items culled from Mr. Comer's notes, to which reference will be made more particularly anon. He tells us that there are two kinds of trees on the island, one of which is quite plentiful, but the other is scarce. These, though stunted, are dense in some places, and retain their leaves all the year round. The thick bushes, he says, extend up to an elevation of about 2000 feet, while the grass and brakes grow very rankly and make walking extremely difficult.

According to the 'Report on the Fisheries and Fishing Industries of the United States,' vol. ii. p. 415 (1887), Gough "island at one time abounded in fur-seals and sea-elephants, but is now almost deserted by those animals. About 1825 a party of American sealers lived there, but met with such indifferent success that the station was abandoned."

The few accounts agree that, owing to the weather-conditions usually prevailing, landing on Gough Island is a matter of great difficulty. In the case of the 'Scotia,' three days were spent off the island, during which her staff, after landing under the most trying conditions, were only able to remain ashore about four hours. This was on the 22nd of April, 1904.

Previous to this visit only twelve species of birds had been identified as forming the avifauna of the island. The naturalists of the 'Scotia' observed or secured examples of nineteen species, and added no less than twelve to the ornis of the island, of which two, or possibly three, are new to science. The total avifauna now stands at twenty-three species.

Only three terrestrial forms are known, all of which are peculiar species—namely, two Buntings of the genus *Nesospiza* and a flightless Gallinule, *Porphyriornis comeri*.

The two species of *Nesospiza* are the most interesting, not, however, because they are novelties, nor because we owe our knowledge of them to the researches of the Scottish Expedition, but because they differ very considerably from their single congener, *N. acunhæ*, peculiar to Tristan da

Cunha, where it is now confined to Inaccessible Island, though it was formerly also found on the main island of the group.

The Gough Island birds of this genus differ remarkably among themselves, and whether they represent two species or only one in various stages of plumage is a matter on which opinions differ. At first I was under the impression that they were representatives, sexual or otherwise, of a single species, but an examination of the material revealed characters which it was difficult to reconcile with such an opinion, and which led me to describe them as two species. My reasons for doing so will be explained in the systematic portion of this contribution.

The Gallinule or "Island Hen" (*Porphyriornis comeri*) appears to differ only slightly from the species (*P. nesiotis*) found on Tristan Island; though, on the other hand, both of them would seem, if report is to be relied upon, to be widely different from the representative of the family found on Inaccessible Island (see Moseley, "Naturalist on the 'Challenger,'" p. 122).

These three terrestrial endemic birds are, moreover, representatives of genera entirely unknown elsewhere except in Tristan da Cunha; and thus Gough Island, though lying over 200 miles to the south, must be looked upon ornithologically as an outlier of the Tristan group. The relationship is, however, somewhat remote, for the Buntings found on Inaccessible and Gough Islands are specifically very distinct; and Tristan possesses a peculiar genus of Thrush, *Nesocichla*, with a single species (*N. eremita*), which is not at present known to have any representative on Gough Island.

The other birds forming the ornis of Gough Island are mostly Tubinares. The number of species of this Order observed during the short visit of the 'Scotia' is quite remarkable, and it would seem probable that a thorough investigation of the island—as yet almost untrodden by the foot of man—in the summer-season would reveal the fact that it is a perfect paradise as a breeding-station for

"Petrels." Indeed, one species of Albatros (*Thalassogeron eximius*) has not been obtained elsewhere.

The only previous contribution to our knowledge of the avifauna of the island is, I believe, contained in a communication by Mr. G. E. Verrill to the 'Transactions of the Connecticut Academy,' based upon the collections and experiences of Mr. George Comer. Mr. Comer resided on Gough Island from the 22nd of August, 1888, until the 23rd of January, 1889, and was engaged, along with others, in the capture of seals. During this period he got together a very creditable ornithological collection, and among his specimens were two birds which proved to be new to science, namely, the flightless Gallinule (*Porphyriornis comeri*) and an Albatros (*Thalassogeron eximius*). Mr. Comer's notes are of considerable interest, and I have not hesitated to make use of them where desirable. I have also included the names of the very few species observed by him of which examples were not obtained or noted by Mr. Bruce and his colleagues, in order to render my account of the avifauna of this most interesting and little-known isle as complete as possible: these are given within square brackets.

The date of the visit of the 'Scotia' to the island was not the best for ornithological work, April being mid-autumn in the Southern Hemisphere. Unfortunately, too, the state of the weather did not permit of more than a few hours being spent ashore, and even then the party could not proceed far inland, owing to the uncertainty of the prevailing meteorological conditions. Under these circumstances the members of the Expedition are to be congratulated upon having accomplished so much good work.

The colours of the bills and feet, when given, are taken from a series of carefully prepared drawings made at the time of capture of the various birds by Mr. Cuthbertson, the artist to the Expedition.

The few species in the following list the identification of which I consider doubtful are not numbered.

I have to thank Mr. W. P. Pycraft for having most obligingly examined certain material submitted to him, and for giving me his valuable opinion thereon.

I shall have occasion to make several references to the following works, in addition to other literature :—

CARMICHAEL.—Some Account of the Island of Tristan da Cunha and of its Natural Productions. By Captain DUGALD CARMICHAEL, F.L.S. Trans. Linn. Soc. xii. pp. 483–513 (1817).

THOMSON.—Voyage of the 'Challenger.' The Atlantic. By Sir C. WYVILLE THOMSON. Vol. ii. (1877).

VERRILL.—On some Birds and Eggs collected by Mr. George Comer at Gough Island, Kerguelen Island, and the Island of South Georgia, with Extracts from his Notes, &c. By G. E. VERRILL. Trans. Connecticut Acad. ix. pp. 430–478 (1895).

SALVIN.—Catalogue of Birds in the British Museum. Vol. xxv. (Tubinares) (1896).

1. NESOSPIZA GOUGHENSIS. (Plate VI. fig. 2.)

Nesospiza goughensis, Eagle Clarke, Bull. Brit. Orn. Club, xv. p. 18.

This species possesses the essential characters of the genus *Nesospiza* as propounded by Cabanis (Journ. für Orn. 1873, p. 154). It is a larger bird than the type (*N. acunhæ*) ; it has a longer and more slender bill, in which the culmen is more arched and the keel of the mandible straighter; and the third primary is slightly the longest.

Adult Male. General colour bright olive-green, slightly washed with silvery grey ; centre of abdomen, under tail-coverts, a stripe from the forehead over and behind the eye, and a malar stripe olive-yellow ; chin, throat, and lores black ; primaries and secondaries slate-grey, with silvery-grey tips and bright olive-green margins, and their under surfaces broadly margined with silvery grey on the inner webs ; under-wing-coverts grey washed with yellowish green ; central pair of rectrices olive-green, the rest grey edged and slightly washed with green. Bill and feet, in life, clove-brown. Wing 4·15 inches, tail 3·68, tarsus 1·18, culmen ·71.

This is probably the summer plumage.

Adult Female. Resembles the male, but is not so brightly coloured, being dull green. Chin, throat, and lores dusky, and, with the buff stripes over the eye and on the malar region, inconspicuous ; feathers of the back and outer margins of secondaries slightly fringed with reddish brown ;

secondaries and tertials tipped with greyish buff; flanks faintly washed with brown; middle of abdomen and under tail-coverts buff; central rectrices dull green, the next edged with buff and the outermost with green. Wing 4·0 inches, tail 3·5, tarsus 1·15, culmen ·68.

? *Adult in Winter Plumage.* Pileum and hind-neck olive-grey; back tawny olive, broadly striped with black on the interscapulary region; upper surface, wing-coverts, and tail washed with sage-green; primaries narrowly edged outwardly with brown; secondaries broadly margined with sage-green and tawny olive; under parts greyish green, washed with tawny olive on the breast and flanks and passing into buff on the lower abdomen and tail-coverts.

This specimen is unfortunately unsexed, but, since the yellow stripes on the head and the black on the throat and lores are brighter than in the female, it is probably a male.

I have ventured to suggest that this bird is an adult in winter plumage, taking my cue from the fact that a somewhat analogous seasonal change is to be found in the male of *Phrygilus melanoderus* of the Falklands. I may mention that the adult male of *N. goughensis* bears a strong resemblance* in colour and markings to the adult male of *P. xanthogrammus* of the Falklands, in which apparently the various stages of plumage are as yet incompletely known, as are also, unfortunately, those of *Nesospiza acunhæ*.

These Buntings, with those next to be described, were captured on the low ground bordering the landing-place, where they were mostly observed hopping about on the boulders, stranded wood, and seaweed, a little above high-water mark. They were not so tame as to permit themselves to be caught, but readily allowed an approach to within two or three yards, and then flitted off to a short distance. They were not observed in the ravine running inland, nor on its steep sides.

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* See Gould's figure in Darwin's "Voyage of the 'Beagle'": Birds, plate 33.

Mr. Comer (Verrill, *l. c.* p. 463), alluding to these birds, says that small birds, like Sparrows, are very common at Gough Island, and are of two kinds—one slatish above, yellowish beneath, and with a round black spot on the breast: the other much like the first, but lacking the black spot; possibly it is the female. Of their habits he merely remarks that they are very tame and sing.

2. Nesospiza jessiæ. (Plate VI. fig. 1.)

Nesospiza jessiæ, Eagle Clarke, Bull. Brit. Orn. Club, xv. p. 18.

Male and Female. General colour orange-buff (brighter on the lower back), streaked with black on the head, back, scapulars, lesser wing-coverts, breast, and flanks; primaries blackish, narrowly edged with dull yellow; secondaries and wing-coverts blackish, broadly edged externally with buff; rectrices with dusky centres and broad buff margins. Bill and feet blackish. Wing 4·05 inches, tail 3·45, tarsus 1·2, culmen 0·65.

In this form the culmen is nearly straight, the gonys is ascending, the first primary is equal to the sixth, and the tail-feathers are lanceolate. In all these respects it differs from *N. goughensis*.

I at first thought that we had in these buff specimens the female and young of the green *N. goughensis*, but on dissecting specimens it was found that the green birds were of both sexes. There then remained the possibility of the buff birds being the young of *N. goughensis*, though differing remarkably in plumage from either parent. An examination of the material, however, disclosed the fact that, although identical in plumage, some specimens were unmistakably immature, while others possessed characters which I interpreted as indications of maturity. In these examples the tendons of the feet were ossified or partially ossified, the fibula was fused to the tibia, and the claws were well-worn. In this connection it is important to remember that, if all young, these birds could only vary a few weeks in their respective ages, for they were obtained in the autumn and hence must be "birds of the year." This evidence, and the other peculiarities alluded to wherein *N. jessiæ* differs from *N. youghensis,* led me to depart from my first impressions regarding the relationship of these forms to each other and to consider them distinct species. I may have been mistaken in so doing, but I think it best to leave it an open question —one to be decided by further investigations based upon a more complete set of specimens.

Judging from Mr. Comer's rough descriptions of the Passerines, he does not seem to have observed this form, and yet he remained on the island down to the very end of summer, when young birds must have been in evidence. We must remember, however, that his observations were not published till some six years after he had left Gough Island, and therefore much that he has told us may have probably been from memory.

3. Porphyriornis comeri Allen.

The flightless Gallinule peculiar to this island was abundant in the dense undergrowth along the sides of the stream. Among this it endeavoured to hide, but its brilliantly coloured bill and feet easily betrayed it. The specimens captured were secured whilst running amongst this thick mass of vegetation. One ran into a burrow in its endeavours to escape, and it is probable that others resorted to similar tactics.

Five specimens were secured, one of which is an immature bird, though full-grown so far as size is concerned. In this undescribed phase the bill and the frontal shield, which is small, are dull olive-green, and the tarsus and toes dull oil-green. It also varies in plumage from the adult, having the upper surface a warm vandyke-brown, a little darker on the head and primaries; the under surface strongly washed with sepia-brown; the flanks brown, two or three of the feathers on each side having short inconspicuous cinnamon stripes; the outer margin of the first primary cinnamon-buff; the edge of the wing streaked with greyish white; the feathers of the lower part of the abdomen edged with greyish white.

In the adult specimens the frontal shield and the basal two-thirds of the bill are deep coral-red, the distal third of the bill bright yellow. The exposed portion of the tibia is deep coral-red. Tarsus and toes bright yellow, the former irregularly blotched with coral-red, while a narrow line of the same colour runs along the sides of the latter. The amount of yellow and red varies much in different specimens and in some the red predominates. The iris is crimson. The wing-measurement of the adults varies from 5·3 to 5·95 inches, in the young specimens it is 5·5 inches.

In form and in the colour of its plumage this bird very closely resembles our familiar Waterhen (*Gallinula chloropus*). The bill and frontal shield are larger and the feet more robust.

Regarding the habits of this bird, which he calls the "Mountain Cock," Mr. Comer (Verrill, *t. c.* pp. 434–435) states that they "cannot fly and only use their wings to help them in running. . . . They are quite plentiful and can be caught by hand. . . . The bushes grow on the island up to about 2000 feet, and these birds are found as far as the bushes grow. I do not know how many eggs they lay. . . . When alarmed, their note is a shrill whistle. They eat the eggs of other birds and also follow the tide down to feed on small animals left by the receding waves, but are careful never to go into salt water . . . . but are very fond of getting into fresh water and splashing it over them. . . . They run swiftly when pursued, helping themselves with their wings, and endeavour to get under a tussock, or some such place, to hide. . . . They have a very peculiar habit of always hopping *over* every obstacle, such as a branch or dead stick, instead of going under it as might be expected."

This species differs from *P. nesiotis*, of Tristan da Cunha, in having scarcely any white on the outer edge of the first primary and in the narrower and smaller streaks of white on the flanks.

4. Sterna vittata Gmelin.

There are five specimens of this Tern in the collection. One of these is an adult, and the rest are in the pretty first plumage, in which the back is strongly barred with buff and black, and the buff fore-neck finely dusted with grey. In the young birds in life the bill is brownish black and the feet pinkish brown. Many of these Terns were seen in the vicinity of the island.

Mr. Comer describes this bird as not uncommon at Gough Island, but makes no mention of its breeding there. It has been recorded from Tristan da Cunha.

5. [ANOUS STOLIDUS (Linn.).

This Noddy was apparently not observed by the members of the Expedition. Mr. Comer's collection contained a specimen from Gough Island, and he remarks "quite a number here" (Verrill, *t. c.* p. 452). It occurs and nests at Tristan da Cunha.]

[LARUS DOMINICANUS Licht.

This Gull is included in Verrill's lists (*t. c.* pp. 450 & 464) for Gough Island, but no specimens appear to have been obtained there. Mr. Comer remarks that there were "a very few Sea-Gulls; do not think there were more than six around the island." These remarks are supposed by Verrill to refer to this species. It did not come under the notice of the Scottish naturalists, nor does it seem to have been observed at Tristan da Cunha.]

6. MEGALESTRIS ANTARCTICA (Lesson).

Many Skuas were observed off the island, and two specimens were added to the collection—probably birds of the year, since they shew rufous markings on the mantle, neck, and lesser wing-coverts.

Under the name of "Sea-Hen," Mr. Comer (Verrill, *t. c.* pp. 450 & 464) describes them as being "quite plentiful," and commencing to lay at the middle of September. "When the Penguins lay, the Sea-Hens come ashore in large numbers, and get their living by robbing the nests and catching the young Penguins. They also kill the young Albatroses, and all the small birds they can catch." Mr. Comer killed about 300 of these birds at Gough Island for the sake of their feathers.

This is also a common bird at Tristan da Cunha.

7. Oceanites oceanicus (Kuhl).

Wilson's Petrel, together with *Cymodroma grallaria*, was observed in some numbers in the vicinity of the island. One specimen was obtained, but another which had been shot was carried off by a Skua ere it could be retrieved. Although this species has a remarkably wide range and occurs in the Atlantic as far north as the European and North-American coasts, it has not yet been recorded for Tristan da Cunha, and did not come under the notice of, or was not identified by, Mr. Comer at Gough Island.

8. Cymodroma grallaria (Vieillot).

This species was observed off the island along with Wilson's Petrel, and was the more numerous of the two. Several examples were obtained and are in the collection.

Though widely distributed in the southern oceans, it does not seem to have been hitherto observed at the Tristan da Cunha group or at Gough Island.

9. Puffinus assimilis Gould.

The collection contains a pair of these birds which Dr. Pirie captured in a deep nesting-hole on the steep grass-covered bank flanking the side of the ravine, his attention being drawn to them by their loud croakings. Similar burrows were extremely numerous, in fact the bank was honeycombed with them; and numbers of the birds were seen off the island. Basal half of the bill pale blue, distal part and nasal tubes black. Front of tarsus and toes greyish blue, posterior portion of tarsus and sides of toes black, webs yellowish.

This species does not appear to have been previously recorded from Gough Island, or from any of the islands of the Tristan group or their neighbourhood.

10. Priofinus cinereus (Gmelin).

There are three specimens of this bird in the collection, all of which have the feathers of the back, upper tail-coverts, and wing-coverts edged with paler grey than the rest of their exposed portions. In life the maxilla is dull pea-green, the nostrils, culmen, and unguis are black; the mandible with apical plate and cutting-edge is black, the lower plate is pea-green. The tarsus and toes are pinkish grey, darker or blackish at the joints, the webs yellowish. In two of the skins the feet are yellow.

A considerable number of these "grey-bodied Petrels, skin No. 9," were seen in the immediate vicinity of the island.

This species has not a place in Verrill's list for Gough Island, nor did it come under the notice of the 'Challenger' naturalists at Tristan da Cunha, but Carmichael (*t. c.* p. 497) records it under the name of *Procellaria cinerea* for the group.

11. MAJAQUEUS ÆQUINOCTIALIS (Linn.).

One specimen was obtained, skin "No. 20, Gough Island," and similar "Black Petrels" are recorded as having been observed. In the example obtained the bill was yellowish, with the basal part of the culminicorn, its margins contiguous to the latericorn, and its tip black; the distal plate and the narrow median plate of the mandible black.

This species does not appear to have been recorded hitherto from any of the islands of the Tristan group.

12. ŒSTRELATA MOLLIS (Gould).

A great number of "Black-backed Petrels (skin No. 14)" were observed off the island, and three examples which were secured are in the collection. In these specimens the bill was black, the tarsus and basal half of the inner toe and of both webs were pinkish white, the rest of the foot was deep brown.

This species was not represented among the birds collected at Gough Island by Mr. Comer and is not included in Verrill's list; but I think that it is probably the unknown species there alluded to under the name of "Paddy unker," a "dark bird with white breast and white feet," of which there is one egg, measuring 2·37 × 1·64 inches, in Mr. Comer's collection (Verrill, *t. c.* p. 449).

Œ. mollis has been recorded from Nightingale Island of the Tristan da Cunha group (Salvin, Voy. 'Challenger,' Zool. ii. pt. viii. p. 144).

13. [Œstrelata lessoni (Garnot).

Mr. Comer's collection contained an example from Kerguelen, and he states (Verrill, *t. c.* pp. 448–464) that this "mutton-bird" was also common at Gough Island. No specimens were, however, obtained there, nor has the bird been recorded from Tristan da Cunha.]

14. Ossifraga gigantea (Gmelin).

Many "Nellies" were observed off the island, and one example, a female, was obtained—a remarkably dark specimen, without a trace of brown, its plumage being throughout deep slaty grey, each feather (except the remiges, the greater wing-coverts, and the tail) terminally or subterminally margined with a slightly paler tint.

The Giant Petrel breeds at Gough Island, where Mr. Comer (Verrill, *t. c.* pp. 447–8 & 464) says that it is not numerous and commences to lay at the middle of September. He tells us that it enters the Penguin "rookeries" and carries off the young to eat, and also pulls birds [Petrels] out of holes in the ground. This destructive species also breeds at Tristan da Cunha.

15. Prion vittatus (Gmelin).

There is only one specimen in the collection, and this is seemingly a large example, for the wing measures 8·7 inches. The lower plate of the mandible was pale blue, and the remainder of the bill black. Tarsus and toes cobalt-blue, webs black.

Great numbers of "Blue Petrels or Whale-birds" were also seen, and other specimens which were shot were carried off by Skuas ere they could be picked up from the water.

This *Prion* has not a place in Verrill's list for Gough Island; but as "*Procellaria vittata*" it is included in the Ornis of Tristan by Carmichael (*t. c.* p. 497), and Wyville Thomson (*t. c.* p. 177) mentions it as a breeding-species on Inaccessible Island.

16. [Prion desolatus (Gmelin).

Mr. Comer obtained skins of this bird at Kerguelen and remarks (Verrill, *t. c.* p. 449) that it is also found at Gough

Island, but he does not appear to have brought back specimens procured there. Salvin (Cat. B. xxv. p. 435) says that it is found between 35° and 60° S.; but it has not, so far as I am aware, been recorded from Tristan da Cunha.]

17. Pelecanoides urinatrix (Gm.).

The collection contains a single example which was captured from the 'Scotia' while her party of explorers was ashore on the 22nd of April, 1904. According to a coloured drawing, made at the time of capture, the tarsus and toes in life are cobalt-blue and the webs and claws black.

No *Pelecanoides* has hitherto been recorded, I believe, for any of the islands of the Tristan group; and if we follow Salvin and regard *P. urinatrix* and *P. exsul* as distinct, then a very considerable extension eastwards of the range of this species is indicated by its occurrence at Gough Island, for it does not appear to have been previously obtained in the South Atlantic elsewhere than at the Falkland Islands. It is even possible that it breeds at Gough Island, for Verrill (*t. c.* p. 449) mentions under this species that there is an egg obtained there in Mr. Comer's collection which is "supposed" to be that of a "Diver." This egg measures 1·57 × 1·6 inch as against 1·54 × 1·26 and 1·52 × 1·23 for eggs of *Pelecanoides* obtained by Mr. Comer, together with skins, at Kerguelen, and hence the *P. exsul* of Salvin (*t. c.* p. 438).

18. Diomedea exulans Linn.

Many Albatroses of this species were observed around the 'Scotia' as she lay off the island from the 21st to 23rd of April, but no specimens were obtained.

Mr. Comer (Verrill, *t. c.* p. 437) says that this species is common at Gough Island and breeds there. It commenced to lay at the end of December; he obtained the first eggs on the 26th of that month, and found them quite plentiful by the 3rd of January. The young, he says, must be ten months old before they can fly, and not more than five per cent. live to leave their nests; they are killed by the Skuas and Giant Petrels. Mr. Comer considers that the Gough Island race is smaller than those from the other islands (South Georgia and Kerguelen), and his statements are borne out, according to Verrill, by both specimens and eggs.

[DIOMEDEA MELANOPHRYS Temm.

The occurrence of this species must be regarded as doubtful. Mr. Wilton records it in his Log as being abundant off the island on the 21st of April. No specimens of this Albatros are, however, in the collection, nor are they mentioned as having been obtained. The species is not included in Verrill's list, based upon Mr. Comer's material and observations; nor does it appear to have been recorded from Tristan da Cunha.]

19. [THALASSOGERON EXIMIUS Verrill.

This was described as a new species by Verrill (*t. c.* pp. 440–445), being founded on a skin and skeleton which were obtained, together with 75 eggs, at Gough Island by Mr. Comer.

It is described as similar in plumage to *T. chlororhynchus*, but the mandible lacks the transverse yellow bar at its base and is entirely black (except at the extreme outer end, where it is tipped with light horn-colour). The bright yellow of the culmen deepens and brightens into orange in the middle and finally into dull red on the margins, growing paler towards the tip.

Mr. Comer says that there is but one kind of "Molly-Mawk" on Gough Island, which is known as the Blue-head. The birds lay their eggs separately, keeping well apart, and are scattered about the island among the tussocks and brakes. They commence to lay on the 20th of September, and their nests are like those of *D. exulans*, only smaller.

It is possible that some of the birds recorded by Mr. Wilton as *Diomedea melanophrys* (but of which no specimens appear to have been obtained) and as being numerous off the island during the stay of the 'Scotia' were of this species.]

20. THALASSOGERON sp. inc.

There is in the collection a single specimen of a "Molly-Mawk" of great interest, since it does not entirely agree with the description of any known species.

I was inclined to think that it might be an immature example of *T. chlororhynchus* in a phase of plumage which, if known, is not described by Salvin (*t. c.* pp. 451–2). It differs, however, from the mature bird of that species in having the bill shorter and entirely black, and the toes much shorter. Its dimensions are: wing 18·2 inches, tarsus 3·0, middle toe 3·5, outer toe 3·2, inner toe 2·3, and culmen 4·75.

This bird was captured under somewhat singular circumstances. Dr. Harvey Pirie was proceeding up the ravine (shown in text-fig. 18, p. 251), when he came upon it on the top of a mass of tussock-grass on which it had alighted, but from which it could not rise on the wing again. It was apparently quite uninjured, and could only have been there a few minutes, for other members of the party had passed the spot only a little in advance, and could not have failed to see the bird had it been there, as the ravine is particularly narrow at the point where it was found. This curious incident might be explained on the supposition that it was a young bird essaying to reach the sea from its inland nursery which had halted by the way. Mr. Comer tells us that the young of *Diomedea exulans* do not fly until they are ten months old; and if this holds good even for a lesser period in other species it would help to explain the date and the peculiar circumstances under which this specimen was found away from the sea.

Mr. Rothschild and Dr. Hartert, who have examined the specimen, tell me that it resembles *T. carteri*, recently described by Mr. Rothschild (Bull. Brit. Orn. Club, xiv. p. 6) from a single example which came ashore with an injured wing at Point Cloates, N.W. Australia, and that the Gough Island bird only differs in having the toes nearly ·75 inch shorter, and in having the hind-neck washed with grey instead of being white. As regards my suggestion that the specimen under consideration may possibly be immature, Dr. Hartert remarks that he finds nothing to shew that other Albatroses have the bill black in the young, and, moreover, that such an example would hardly have a face with pure white sides.

21. PHŒBETRIA FULIGINOSA (Gmelin).

A typical specimen of the Sooty Albatros is in the collection, and many others were seen, with lesser numbers of Hutton's Albatros (*P. cornicoides*), around the 'Scotia' as she lay off the island.

Mr. Comer (Verrill, *t. c.* pp. 445 & 464) describes the species breeding at Gough Island as having the beak dark with "a yellow stripe on each side." It is common but does not breed in "rookeries"; it places its nests separately on cliffs or projecting rocks, where it is most difficult to get at them. The bird commences to lay by the middle of September, and, while sitting, keeps up a continual cry similar to that of a young goat.

This is probably the form which also nests at Tristan da Cunha, for Capt. Carmichael (*t. c.* p. 489) alludes to the bird as the "Black" Albatros (*Diomedea fuliginosa*) and describes its breeding-habits.

22. PHŒBETRIA CORNICOIDES Hutton.

I think that there can be little doubt of this being a distinct species. It was only imperfectly described by Capt. Hutton ('Ibis,' 1867, p. 192), from specimens observed at sea, and as a variety of *P. fuliginosa*.

In a letter dated January 4th, 1905, Capt. Hutton tells me that this form has the "back and breast grey, head and neck sooty brown," and that his statement about the mark on the mandible being white was an error. As we now know, this mandibular stripe is pale blue and much smaller than in *P. fuliginosa*.

Salvin (*t. c.* p. 454) says, "if these birds can be traced to a definite breeding-place where they alone are found, it would be well to assign them specific rank." This Capt. Hutton has done, for he tells me that it is the common form in New Zealand, and "breeds at the Auckland Islands and Antipodes at the end of October," but that he does not recollect ever having seen the sooty form in New Zealand. That *P. fuliginosa* alone, so far as our present information goes, breeds at Gough Island and

Tristan da Cunha has already been mentioned under that species, and this affords additional evidence in favour of the specific difference of the two forms.

This species was, however, observed off Gough Island by the Scottish Expedition in somewhat less numbers than the last, but no specimens were obtained there.

23. Eudyptes chrysocome (Forster).

Several Rock-hopper Penguins were seen ashore, but at places where they could not be reached. Two skeletons, with some feathers still adhering to them, were found on the beach where the landing was effected, and were secured.

At Gough Island, Mr. Comer says (Verrill, *t. c.* p. 462), there is no other kind of Penguin. They "number millions" and commence to lay by the 15th of September. This is the only species of Penguin found at Tristan da Cunha, where it breeds on all three islands.

In addition to the three endemic land-birds, to which special allusion has already been made, the following marine species have been recorded for the Tristan da Cunha Isles which have not been observed or obtained at Gough Island, namely:—*Anous melanogenys*, *Pelagodroma marina*, and *Daption capensis*, which Moseley (*op. cit.* p. 134) says breeds there!

XXII.—*Notices of recent Ornithological Publications.*

(Continued from p. 135.)

32. *Andersen on the Birds of the Færoe Islands.*

[Meddelelser om Færoernes Fugle. 6te Række. Ved Knud Andersen. Vidensk. Meddel. Khvn. 1895, p. 53.]

Mr. Andersen continues his notes on the birds of the Færoe Islands (see 'Ibis,' 1903, p. 248)—a group which, situated halfway between Great Britain and Iceland, is of much interest to English ornithologists, though comparatively seldom visited by them. The birds, however, appear to be well watched by the native observers, whose notes are here given, put together in methodical order. They relate to 103 species.

33. *'Aquila,'* 1904.

[Aquila: Zeitschrift für Ornithologie. Redact. Otto Herman. Tom. xi. Budapest, 1904.]

'Aquila,' the official Hungarian periodical for Ornithology, edited by Otto Herman, has been issued for 1904, in one volume of 400 pages. It contains a mass of statistics on the arrival of the Swallow (*Hirundo rustica*) in Hungary (to which we invite the attention of the members of the newly appointed Committee on Migration of the B. O. C.) and much discussion on the good and bad habits of the Rook (*Corvus frugilegus*), besides minor contributions. An example of Bonelli's Eagle (*Nisaëtus fasciatus*) is recorded as having been obtained in the district of Mosorin in April 1903. The species is stated to be new to the Hungarian Ornis.

34. *'Avicultural Magazine.'*

[Avicultural Magazine. The Journal of the Avicultural Society. New Series. Vol. iii. Nos. 1–3. London: Nov. 1904 to Jan. 1905.]

In these three parts of the 'Avicultural Magazine' a large number of the papers relate, as usual, to the successful breeding of various birds in captivity, the most striking being those of Mr. W. H. St. Quintin, Mrs. Johnstone, and Mr. W. P. Pycraft. In the first of these, concerned with the breeding of *Pterocles exustus*, the author calls attention to the habit of the male Sand-Grouse, which soaks its breast in water to give drink to the young, a fact ascertained by Mr. Meade-Waldo in the case of *P. alchata*. In the second article the lady-writer describes the nesting of Fraser's Touraco (*Turacus macrorhynchus*) in her aviaries, and so leads up to the third, wherein Mr. Pycraft gives full details of the newly-hatched young of the Touraco, the downy stage of which has already been noted by Sir Harry Johnston in the case of *Turacus livingstoni* and *Gallirex chlorochlamys*. The nestling remains downy for at least a month after it is hatched, though the quill-feathers are greatly developed at an early stage, the outer secondaries and innermost primaries being the longest. The major coverts, moreover, are the first feathers to complete their growth. The "feet" are very large and the "legs" very short, the former being semi-zygodactylous, as the outer toe can be turned at right angles to the axis of the middle toe, with which it is connected by a web. Mrs. Johnstone gives a woodcut of the nestling and Mr. Pycraft contributes illustrations of the wings and down-feathers.

In an account of some of the birds of the Seychelles Mr. B. C. Thomasset gives us the welcome intelligence that the fine Pigeon *Alectorœnas pulcherrima* is still numerous where protected.

Coloured plates are furnished of the European and Himalayan Goldfinches and of *Leptoptila jamaicensis*.

35. *Beebe on the Psychology of Birds.*

Some Notes on the Psychology of Birds. By C. William Bebe. Abstr. Proc. Linn. Soc. New York, 1902 4, p. 40.]

We hardly know what to say about this paper, to which our attention has been specially invited, but fear that some of the stories told in it are more or less of an imaginative character. We confess to have read of crows sitting in judgment on one of their fellows and executing the offender after due condemnation, but thought it was in Gay's Fables! Who saw the Loon "risk its life" in order to save a Grebe from an ice-trap? When we come to such matters as "play" and "courtship," we enter on less debatable ground. Every one will allow the importance of these functions in the life of birds, and they present facts which cannot possibly be controverted. Here, at least, we are on solid ground. But they should not, in our opinion, be mixed up with speculations concerning which no proof is possible.

36. *Bishop on the Breeding of North-American Birds.*

[The Eggs and Breeding-Habits of some comparatively little-known North-American Birds. By L. B. Bishop, M.D. Abstr. Proc. Linn. Soc. New York, 1902-4, p. 48.]

Dr. Bishop describes the nesting-habits and eggs of *Rallus crepitans scotti*, *Rallus crepitans waynei*, *Agelæus phœniceus* *floridanus*, and other subspecies from Florida, Carolina, and Dakota, after his own observations.

37. *Bonhote on Coloration in Mammals and Birds.*

[On Coloration in Mammals and Birds. By J. Lewis Bonhote. Journ. Linn. Soc., Zool. xxix. pp. 185–187.]

This paper is an abstract of Mr. Bonhote's article on the subject of coloration, and aims at shewing that colour is chiefly due, in the case of mammals and birds, to activity of nutrition and function (vigour), which itself depends on temperature, food, and sexual activity. Instances are taken from the various regions of the world to explain the reasons of dark hues, bright tints, and bleaching. The centres from which "bleaching" takes place it is proposed to name "pœcilomeres." The discussion of seasonal changes and protective coloration is purposely omitted.

38. *Bureau on the Sooty Tern.*

[Note sur la présence accidentelle de la Sterne fuligineuse, *Sterna fuliginosa* Gmel., sur les Côtes de le Loire-Inférieure. Par le Dr. Louis Bureau. Ext. du Bull. Soc. Sci. Nat. de l'ouest de la France, 2e sér. iv. pp. 227–256.]

The author notices and figures a specimen of *Sterna fuliginosa* killed near Pornic on July 24, 1904. He takes the opportunity, moreover, of discussing the various stages of plumage of the bird, its history, distribution, and reproduction, with full details in all cases. He gives, by way of comparison, the occurrences of other species of Terns from the Tropical Seas and from Europe.

39. *Chapman on the Birds of Alaska.*

[List of the Birds collected in Alaska by the Andrew-J.-Stone-Expedition of 1903. By Frank M. Chapman. Bull. Am. Mus. N. H. vol. xx. p. 399. New York, 1904.]

This is a report on the birds obtained in Alaska by Mr. M. P. Anderson, who accompanied Mr. Stone as collector during his expedition in the summer and autumn of 1903. The series contains 317 birds and 35 sets of eggs. The birds are referred to 62 species, all of which were previously known and named. Seven specimens of *Somateria v-nigrum* (not *v-nigra* !) were obtained at Bird Island, Seldovia, and two nests were taken, one with 5 eggs and another with 4.

10. *Chapman on the Nesting of the Flamingo.*

[(1) A Flamingo City, recording a recent Exploration in a little-known Field of Ornithology. By Frank M. Chapman. Century Magazine, December 1904.

(2) Young Flamingoes. By Frank M. Chapman. Bird-Lore, vol. vi. No. 6, Nov. Dec. 1904.]

In the first of these articles Mr. Chapman gives a well-written and most interesting account of his visit in May 1894 to a nesting-place of the Red Flamingo (*Phœnicopterus ruber*) in one of the islands of the Bahama group. The narrative is profusely illustrated by photographic pictures taken on the spot, and by coloured plates which shew us every phase of the existence of this remarkable bird from the egg to the adult. It is, in fact, a most attractive piece of work, and we are only sorry that it should lie buried among a mass of ordinary fiction, not always of a first-class character. But no ornithologist should omit to read it.

In the second article, in 'Bird-Lore,' further particulars are given concerning the habits and plumages of the young Flamingo. This is also appropriately illustrated.

We venture to think, however, that the original source from whence Mr. Chapman gained his information as to the existence of the "Flamingo-rookery" should have been more clearly stated. We believe that it was due to the active researches of a well-known member of the B. O. U. that the discovery was made *. It would also have been better to state that the idea of the Flamingo "straddling" across its nest in order to cover its eggs had not only been upset twenty years ago, but that the exact position of the legs when the bird is sitting had been correctly figured from Mr. Chapman's sketches in 1884 †.

* *Cf.* Bull. B. O. C. xv. p. 51 (1905).

† See 'Ibis,' 1884, pl. iv.

41. '*The Emu.*'

[The Emu. A Quarterly Magazine to popularize the Study and Protection of Native Birds. Official Organ of the Australasian Ornithologists' Union. Melbourne: 1904, vol. iv. pt. 2.]

Even in Australia new discoveries must gradually become less frequent, though many districts still need fuller exploration, so it is not surprising that this part of 'The Emu' contains less that is absolutely novel than many of its predecessors. Nevertheless, there are several interesting papers, the chief of which are by Mr. J. F. Kilgour on a trip to the Ord River, West Australia; by Mr. A. W. Milligan on some critical species from the same colony and their allies; and by Mr. F. L. Berney on migratory birds in North Queensland. Mr. Kilgour, in particular, gives an account of the bower, nest, and eggs of *Chlamydera nuchalis*. Articles on British Papua, Bird Sanctuaries in New Zealand, and so forth, followed by the usual minor contributions, complete the part.

42. *Figgins's Field-notes on Alaskan Birds.*

[Field-notes on the Birds and Mammals of the Cook's Inlet Region of Alaska. By J. D. Figgins. Abstr. Proc. Linn. Soc. New York. 1902-4, Nos. 15-18 (1904).]

These field-notes relate to the collection made during the "Stone Expedition" of 1901, and are additional to those published in Mr. Chapman's Report on the birds collected during that expedition (see Bull. A. M. N. H. xvi. p. 231, and 'Ibis,' 1903, p. 415). The preface contains an interesting description of the Cook's Inlet district, which is called the "summerland of Alaska" and is the resort of "countless thousands of waterfowl."

43. *Godman's 'Biologia Centrali-Americana.'*

[Biologia Centrali-Americana; or, Contributions to the Knowledge of the Fauna and Flora of Mexico and Central America. Edited by F. DuCane Godman. (Zoology.) Parts CLXXVIII.-CLXXXV. London: R. H. Porter.]

We have now the pleasure of announcing the completion of the "Birds" of this important work, to the progress of which frequent allusions have been made in our columns. The last two parts issued contain the Index, the Title-pages, and the Introduction. As completed, the "Birds" of the 'Biologia' make four handsome volumes—three of text and one of plates, which are 79 in number, drawn by Keulemans and beautifully coloured.

Mr. Godman's "Introduction" will be read with interest. After Salvin's death, "which greatly retarded the issue of the third volume," the help of Dr. Bowdler Sharpe and Mr. Ogilvie-Grant was obtained, and the "Birds," which had been commenced in September 1879, were brought to an end in November last. The supplement, at one time projected, was wisely, as we think, abandoned. "The critical examination of the large amount of additional material that had come to hand during the progress of publication, and the analysis of the extensive literature on the subject issued in recent years, could only have been dealt with satisfactorily with the assistance of Salvin himself," and Mr. Godman "was reluctantly compelled to leave this portion of the subject untouched."

"The 1413 species of birds included in this work embrace representatives of 78 families and 539 genera. Out of the twenty Orders given in the 'Nomenclator Avium Neotropicalium' (1873), all but three (the Opisthocomi, the Struthiones, and the Impennes) are represented. The other Neotropical families wholly absent from Central America are the Phytotomidæ amongst the Passeres; the Steatornithidæ, of the Macrochires; the Todidæ, of the Coccyges; the Palamedeidæ, of the Anseres; the Cariamidæ and Psophiidæ, of the Geranomorphæ; and the Chionididæ and Thinocoridæ, of the Limicolæ. To the Passeres belong rather more than half (741) of the total number of Central-American species, this proportion being much greater than that given in the 'Nomenclator' for the whole of the Neotropical Region, with 3565 species, where the numbers are 1976 and 1589 respectively."

Out of the total number of 1413 species included in this portion of the work, 636 are "endemic"—*i. e.*, not found outside the geographical limits selected. Of the endemic species, 271 are restricted to Mexico, Honduras, or Guatemala, 3 to Nicaragua, and 162 to Costa Rica or Panama, the remainder being more widely distributed within the area treated. The Trochilidæ are the most numerous family in Central America, having 118 representatives, and the Fringillidæ, with 104 species, come next.

"To summarize the results arrived at, the Avifauna of Central America may be described as essentially Neotropical, with certain peculiar forms (such as *Oreophasis derbianus*, *Meleagris ocellata*, *Pharomacrus mocinno*, and *Zeledonia coronata*) restricted to it. Central America, as here treated, is in fact merely a subregion of the Neotropical Region, with a large admixture of Nearctic forms, especially during the northern winter."

Mr. Godman next proceeds to describe shortly the various journeys made by Salvin and himself to Central America in quest of materials for the present work. Salvin went three times to Guatemala, in 1857, 1861, and 1867, accompanied during part of his second journey by Mr. Godman. His usual headquarters were Dueñas, about 30 miles south of the capital, situated between the volcanoes of Agua and Fuego, but many other places were visited and the whole country was carefully searched. In 1887–8 Mr. Godman made an expedition to Southern Mexico and took with him some excellent collectors, all of whom did good work and continued to obtain specimens for him after his return home. The assistance of other collectors was also obtained—Rogers in Costa Rica, Lloyd and Armstrong in Northern Mexico, Gaumer in Yucatan, Blancaneaux in British Honduras, and McCleannan on the Panama Railway. Other large collections were acquired by purchase, and from all quarters an enormous series of 86,000 bird-skins was assembled, which by a noble act of generosity has been transferred to the British Museum at South Kensington.

The Introduction to the "Birds" of the 'Biologia' concludes with tables shewing the distribution first of the families and then of the species of the Birds of Mexico and Central America. The list of species, especially among the Passeres, has been already augmented by the energetic ornithologists of the United States, and a few more forms may yet remain to be discovered. But the present work on the Avifauna of Central America, as described by the authors, will ever constitute a standing monument of their industry and munificence, and has now, after a long period of hard work, been brought to a successful conclusion, forming one of the most carefully prepared and well-executed bird-books of the present epoch.

It must also be recollected that the "Birds" are but a fragment of the great work of which the four volumes form a portion, the 'Biologia,' with its twenty volumes, embracing nearly every branch of the terrestrial fauna, besides Botany and Antiquities.

44. *Hartert on Birds from N.W. Australia.*

[List of Birds collected in North-west Australia and Arnhem Land by Mr. J. S. Tunney. By E. Hartert, Ph.D. Nov. Zool. xii. p. 194 (1905).]

As arranged by Dr. B. Woodward, the Curator of the Perth Museum, Mr. Tunney went to North-west Australia, the least-known part of the continent, in quest of mammals and birds for Tring, and made a large collection, of which we have a good account in this paper. Examples of no less than 221 species and subspecies of birds were obtained, of which the following are now characterized as new:—*Colluricincla woodwardi*, *Cracticus quoyi tunneyi*, *Gymnorhina tibicen longirostris*, *Pœcilodryas cinereiceps*, and *Myzomela obscura grisescens*. Many other little-known species are in the List.

45. *Hartert and Ogilvie-Grant on the Birds of the Azores.*

[On the Birds of the Azores. By Ernst Hartert, Ph.D., and W. R. Ogilvie-Grant. Nov. Zool. xii. p. 80 (1905).]

We have here a most interesting account by Mr. Ogilvie-Grant of his expedition to the Azores in 1903, accompanied by a complete list of all the birds as yet known to occur in that group of islands prepared by Mr. Hartert, with Mr. Grant's field-notes on the species which he observed.

In his introductory remarks Mr. Hartert gives us a general sketch of the Azorean ornis, from which we gather the following particulars:—

The ornis of the Azores is entirely Palæarctic, and is poor in the number of species. We may accept the occurrence of about 120 species in the group, of which 26 or 27 breed there. Some of these are perfectly identical with those of Europe (e. g., *Erithacus rubecula* and *Sylvia atricapilla*), but others have become slightly differentiated (e. g., *Columba palumbus azorica*, *Sturnus vulgaris granti*, and *Turdus merula azorensis*). One, the Grey Bullfinch (*Pyrrhula murina*), is remarkably distinct from its congeners. A few species are the same as Madeiran and Canarian forms or closely allied to them (such as *Serinus canaria* and *Fringilla moreleti*), but none of the more remarkable forms peculiar to Madeira and the Canaries occur in the Azores.

After Mr. Hartert's introductory remarks we find Mr. Ogilvie-Grant's lively narrative of the expedition, in which he was accompanied by his brother-in-law, Mr. G. A. St. Quintin, M.B.O.U., and Mr. L. C. Harwood as taxidermist. This journal we need not enlarge upon—it will be read with pleasure by the author's many friends,—but we may say that the party met with a most courteous reception from the officials, and, apparently, everyone else in the different islands of the Azorean group, to nearly all of which they paid a visit, not, however, without experiencing certain difficulties from wind and weather. Some good photographic text-figures illustrate Mr. Grant's narrative.

At Ponta Delgada Major F. A. Chaves, head of the meteorological service, received the party in the kindest manner and gave them assistance of every sort. Here was found a good local museum, containing a very fair series of zoological specimens, got together by Major Chaves's energy.

The third part of the memoir contains Mr. Hartert's "List of the Birds of the Azores," and contains the names of 121 species—shewing a considerable increase on Mr. Godman's list of 1870, which enumerated only 53 species. It is interspersed with Mr. Grant's field-notes, which are short, but always to the point. The new subspecies described are *Columba palumbus azorica* and *Turdus merula azorensis,* several others having been previously named. But the only absolutely distinct and easily recognised species peculiar to the Azores is the Bullfinch (*Pyrrhula murina*), to which, however, Mr. Hartert allows only subspecific rank. This fine bird, although plentiful when discovered by Mr. Godman, has now become very scarce, and its complete extinction, we are told, is probably only a matter of a few years. Mr. Grant had some difficulty in obtaining a single pair.

46. *Hatcher on the Birds of Patagonia.*

[Reports of the Princeton University Expeditions to Patagonia 1896–1899. J. B. Hatcher in Charge. Edited by William D. Scott, Slade Professor of Geology and Palæontology, Princeton University. Volume I. Narrative of the Expeditions. By J. B. Hatcher. 4to. Princeton & Stuttgart, 1903. 314 pp.]

In our last number (above, p. 131) we gave a notice of the first part of Mr. W. E. D. Scott's work on the birds of Patagonia, which is based mainly on the collections made by Mr. Hatcher and his active assistants during his three expeditions to that country. Mr. Hatcher's principal object was to collect the fossils of Patagonia, concerning which the remarkable discoveries of Dr. Florentino Ameghino and his brother "had so strongly aroused the interest of the scientific world." But while the geological collections were being made the examination of the present fauna and flora of Patagonia was by no means neglected, and large series of specimens in nearly every branch of natural history, especially mammals, birds, and plants, were accumulated. The narrative of the journeys of Mr. Hatcher and his assistants is contained in the volume now before us, and will be found well worthy of perusal. The point of landing and the head-quarters of the three expeditions was Gallegos, near the mouth of the river of the same name, in Southern Patagonia, from which, as a base, a large extent of the Argentine territory of Santa Cruz was explored and investigated. We call special attention to this work because of the numerous descriptions of the bird-life of the country interspersed in it, which certainly should not be neglected by the ornithologist, although it is probable that the main facts here recorded will also be given by Mr. W. E. D. Scott in his special ornithological volume, the first part of which was noticed in our last number. We may call attention, for example, to the passages on the Carrion-Hawks (*Polybori*) of Patagonia (p. 57), to the numerous allusions to the Patagonian Rhea (*Rhea darwini*) and the Condor (*Sarcorhamphus gryphus*), to the description of the large colonies of the Black-faced Ibis (*Theristicus melanopis*) (p. 178), and to the account of the peculiar habits of *Upucerthia dumetoria* (p. 83). Many other references to birds will be found in Mr. Hatcher's narrative, which amply prove that, although Palæontology may be his first love, he is an acute and much interested observer of existing animal-life as well as that of bygone ages.

47. *Heilmayr on Brazilian Finches.*

[Ueber neue und wenig bekannte Fringilliden Brasiliens, nebst Bemerkungen über nothwendige Änderungen in der Nomenclatur einiger Arten. Von K. E. Hellmayr. Verh. zool.-bot. Gesellsch. in Wien, 1904, p. 616.]

We are glad to understand that Herr Hellmayr has in preparation a general review of the Brazilian Ornis, which will be a very useful piece of work. As a contribution thereto we have before us a paper on some of the Fringillidæ of Brazil, which is of much value, although, in our opinion, all changes in established nomenclature should be deprecated unless absolutely necessary.

The unfortunate *Amaurospiza mæsta* is clearly shewn to have received four different names from four different authorities. We may hope that the proper appellation of this rare Finch is now finally settled.

The rest of Mr. Hellmayr's paper is taken up with remarks on the Brazilian species of *Spermophila*, or, as the author, following Dr. Cabanis, calls it, *Sporophila*, of which 12 species, besides subspecies, are recognised. Two of the species are described as new—*S. saturata* from South Brazil, and *S. lorenzi*, probably from Cayenne. Mr. Hellmayr has examined most of the types of the different species, and appears to have done his work well.

48. *Hutton on the Curlew-Sandpiper.*

[On the Occurrence of the Curlew-Sandpiper in New Zealand. Trans. New Zealand Inst. xxxvi. p. 155 (1904).]

Capt. Hutton records the occurrence of two specimens of the Curlew-Sandpiper (*Tringa subarquata*) at Lake Ellesmere, in New Zealand, in April 1903. As this far-wandering bird had already been met with in Australia and Tasmania, this occurrence is not to be wondered at. One of the specimens was sent to the British Museum.

49. *Ihering on the Birds of Paraguay and S. Paulo.*

[Estudo comparativo das Avifaunas de Paraguay e de S. Paulo, por H. von Ihering. Revista d. Mus. Paul. vi. p. 310 (1904).]

After a short enumeration of the principal authorities on the Birds of Paraguay and a useful list of the titles of their books and papers, Herr v. Ihering gives a systematic catalogue of the species ascertained to belong to the avifauna, with occasional remarks as required. All the supposed "new species" of Bertoni * are referred to their correct headings. The list, which nearly follows the arrangement of the 'Nomenclator,' contains 470 names. The author then proceeds to the birds of S. Paulo, at which he has so long and so zealously laboured, and makes alterations in, and additions to, his account of the avifauna published in the fifth volume of the 'Revista' †. With these additions and omissions, the ornis of S. Paulo is credited with 657 species. The memoir concludes with a "Zoo-geographical Discussion" of the avifaunas of Paraguay and South Brazil, which is worthy of careful study.

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* *Cf.* 'Ibis,' 1904, p. 172.

† See 'Ibis,' 1891, p. 134, and 1903, p. 421.

50. *Macoun on Canadian Birds.*

[Catalogue of Canadian Birds. Part III. Sparrows, Swallows, Vireos, Warblers, Wrens, Titmice and Thrushes. Including the Order Passeres after the Icteridæ. By John Macoun. Ottawa: 1904. 8vo. Pp. i–iv, 415–733, and (Index) pp. i–xxiii. Price 10 cents.]

This part of Mr. Macoun's Catalogue, which concludes the work, though an addendum will be shortly forthcoming, is devoted to those of the Passeres which have not already been treated (see Ibis, 1904, p. 157). It is far from being a mere list of species, as most valuable notes are given on their distribution and breeding-habits. The nests and eggs are in several cases described "for the first time" by Mr. Raine (*e. g.* of *Leucosticte tephrocotis* and *Zonotrichia querula*), but we are not informed whether the description has appeared in print before, or, in other words, whether it is now quoted from the 'Ottawa Naturalist' or other periodicals to which Mr. Raine is accustomed to contribute.

The services of several new observers have been obtained, and many districts more carefully examined, as, for instance, Southern British Columbia, the Peace-River region, and the country round Banff, in the Rocky Mountains. Details are constantly added concerning the islands off the west coast, and there is a particularly interesting article on *Ampelis garrulus*.

51. *Madarász on the Birds of Cyprus.*

[Ueber die Vögel Cyperns. Von Dr. Julius Madarász. Ann. Mus. Nat. Hung. ii. p. 499. Buda-Pesth, 1904.]

A new list of the birds of Cyprus is not unwelcome, as that of the late Lord Lilford was published (in this Journal) in 1889, and much has been done since that date. Dr. v. Madarász bases his memoir on the birds transmitted to the National Hungarian Museum by Herr Ch. Glaszner, who has been resident at Larnaca since 1891, and has thus had exceptionally good opportunities of studying the Bird-life of Cyprus.

Herr Glaszner has sent to Buda-Pesth considerable series of some species (upwards of 100 specimens of *Sylvia melano-*

thorax!), and has augmented the Cyprian avifauna by the discovery of such representative forms as *Parus aphrodite, Scops cypria, Garrulus glaszneri, Loxia guillemardi,* and others, which are restricted to the island. Thus supplemented, the ornis of Cyprus is now shown to contain 249 species. We confess, however, to being a little doubtful about some of them. Are there really three different Starlings in Cyprus—*S. poltaraszkii, S. purpurascens,* and *S. porphyronotus*?

52. *Osgood on the Birds of the Alaskan Peninsula.*

[North-American Fauna.—No. 24. A Biological Reconnaissance of the Base of the Alaska Peninsula. By W. H. Osgood, Assistant Biological Survey. Washington, 1904.]

This is an account of one of the summer tours to which our friend Dr. C. Hart Merriam, Chief of the Division of the Biological Survey of the U.S., occasionally treats himself or some member of his staff. On this occasion the base of the Alaskan Peninsula, being little known to naturalists, was selected for investigation, and Mr. Wilfred H. Osgood, an assistant in the Biological Survey, was deputed for the task. The well-written and nicely illustrated report now before us shews how the "biological reconnaissance" was accomplished, while the exact route followed is plainly set forth on several maps. There is much general information to be gained from the pages of this memoir, and the "list of birds" contains a series of valuable field-notes relating to about 130 species.

Of *Phylloscopus borealis,* which has recently been ascertained to intrude into Western Alaska, two specimens were obtained in July 1902.

53. *Reichenow's 'Birds of Africa.'*

[Die Vögel Afrikas, von Ant. Reichenow. Dritte Band, erste Halfte. Neudamm: J. Neumann, 1904.]

The first portion of the third volume of Dr. Reichenow's 'Vögel Afrikas,' which has been lately issued, contains his account of the Ploceidæ, Fringillidæ, Motacillidæ, Alaudidæ, and Pycnonotidæ—altogether making about 490 species. We are glad to observe that though subspecies are recognised, they are not included in the numbering of the species, which already amount to 1786. The following species are figured in four plates:—*Glaucidium castaneum, Pisorhina badia, Erythropygia hartlaubi, E. vulpecula, Tarsiger orientalis, T. guttatus, Alethe poliothorax, Bradypterus castaneus, Andropadus montanus, Bleda poliocephala*, and *Phyllostrephus chlorigula*.

54. *Reichenow on the Birds of the German Deep-sea Expedition.*

[Uebersicht der auf der deutschen Tiefsee Expedition gesammelten Vögel. Von Anton Reichenow. 1904. (Two coloured plates.)]

The seventh volume of the series of reports on the scientific results of the voyage of the German Deep-sea Expedition under Prof. Chun contains an account of the birds obtained, drawn up by Dr. Reichenow. In all 71 species are enumerated, most of which are, as might be expected, marine. Three new "conspecies" are characterised—*Corvus splendens maledivicus* from the Maldives, *Buchanga stigmatops phædra* from Sumatra, and *Butorides javanicus albo-limbatus* from Diego Garcia.

Charadrius rufocinctus from S.E. Africa and *Homopelia picturata chuni* from Diego Garcia, both already described by Dr. Reichenow (Orn. Monatsb. viii. p. 123, 1900), are now figured. The typical *H. picturata* is figured in company with the latter.

In relation to this voyage, Prof. Van Höffen's article in the 'Journal f. Ornithologie' for 1901 should be consulted.

55. *Riley on a new* Myiarchus.

[Description of a new *Myiarchus* from Grenada and St. Vincent, West Indies. By J. H. Riley. Smiths. Miscell. Coll. vol. ii. p. 275 (1904).]

Myiarchus oberi nugator (subsp. nov.) represents this form of Tyrant-bird in Grenada and St. Vincent. The types are in the U.S. National Museum.

56. *Riley on Birds from Barbuda and Antigua, West Indies.*

[Catalogue of a Collection of Birds from Barbuda and Antigua, British West Indies. By J. H. Riley. Smiths. Miscell. Coll. vol. ii. p. 297 (1904).]

In this paper we have an account of a collection of 324 skins formed by Mr. E. G. Selwyn-Branch on the (ornithologically) little-known islands of Barbuda and Antigua, British West Indies, in 1903, and acquired by the U.S. National Museum. Adding previous records we are now acquainted with 59 species and subspecies from Barbuda and 61 from Antigua.

A new subspecies of Kestrel from Porto Rico is described as *Cerchneis sparveria loquacula,* and a new and distinct species of *Dendrœca* from Barbuda is named *D. subita.* The form of *Coccyzus* in Dominica (*C. dominicæ* Shelley) is quite unnecessarily renamed *Coccyzus shelleyi.* We may be allowed to point out that "*dominicus*" is an adjective and "*dominicæ*" a feminine substantive in the genitive case, and that these two terms are *not* identical.

57. *Robinson on Malayan Birds.*

[List of a small Collection of Mammals, Birds, and Batrachians from Gunong Angsi, Negri Sembilan. By Robert C. Robinson, M.B.O.U. Journ. Fed. Malay States Mus. vol. i. p. 25 (1895).]

The first number of the new journal lately started by the Museums of the Federated States of the Malay Peninsula contains, among other articles on a variety of subjects, one which refers to our branch of science. This is a list of the birds procured by the Dyak hunters of the Selangor Museum on Gunong Angsi, the highest point of a range of hills in Negri Sembilan, not connected with the main range and covered with heavy timber. The list, we are told by Mr. Robinson, seems to shew that the characteristic Himalayo-Sondaic forms, such as *Sibia*, *Mesia,* and *Pterythrus,* do not occur on these mountains, which, so far as our present information goes, are tenanted by typical Malayan forms, identical with those found on Mount Ophir and in the Johore Hills.

Mr. Robinson's list of birds contains the names of 34 species, to which short remarks are added. None of them are new, but some are not yet quite positively identified.

58. *Smith Woodward on Fossil Birds.*

A Guide to the Fossil Mammals and Birds in the Department of Geology and Palæontology in the British Museum (Natural History), Cromwell Road, London, S.W. With 6 plates and 88 text-figures, Eighth edition. London, 1904. Price Sixpence.]

This is, we may surely say, as cheap a sixpennyworth of scientific matter as has ever been offered to the public for their instruction. The greater part of the 'Guide' is, of course, devoted to the Mammals, which in their fossil state are very much more numerous than Birds. But the last ten pages of the work are occupied by a condensed account of the principal extinct forms of bird-life, and are illustrated by text-figures in which their leading features are admirably shown. We have the wonderful skulls of *Odontopteryx* and *Phororhacos*, and the whole skeletons of *Hesperornis*, *Ichthyornis*, and *Dinornis* set before us, besides interesting particulars concerning the only two known specimens of the anomalous form *Archæopteryx* yet discovered, which are now-a-days referred to two different species.

59. *Vallentin on Birds from the Falkland Islands.*

[Notes on the Falkland Islands. By Rupert Vallentin. Manch. Mem. xlviii. pt. 3, no. 23. Manchester, 1904. Pp. 48.]

Mr. Vallentin, who has recently paid two visits to the Falkland Islands, has in the present memoir put together a good deal of information concerning this distant outlier of the Empire. Besides many allusions to the birds of the group, the author gives a special heading to the section "Aves," and arranges his field-notes of this subject in systematic order, following "as a Guide" Evans's volume on 'Birds.' About 36 species are mentioned, and interesting information is given with regard to many of them. The Penguins form a leading feature in the Falklandian Avifauna, and good notes are given upon the four species of this family that are found in the group. Views, from photographs, of the "rookeries" of the Rock-hopper and Gentoo are added, but there is no map of the islands to shew their exact localities. Nor is the list of books and papers on the natural history of the Falklands by any means complete.

XXIII.—*Letters, Extracts, and Notes.*

We have received the following letters addressed to "The Editors of 'The Ibis'":—

Sirs,—I wish to point out that *Ortholophus finschi* of Dr. Sharpe ('Ibis,' 1904, p. 610) is simply a synonym of *Buceros albocristatus* Cassin, of Liberia. If Dr. Sharpe had read my review carefully* he would hardly have written (*l. c.*): "I do not think that Dr. Finsch can have seen Cassin's plate and description in the 'Transactions of the Philadelphia Academy' (vol. i. p. 135, pl. 15)." In the carefully-compared synonymy of my paper on *Ortholophus* I have referred to all of Cassin's publications respecting this species, and especially to the description and plate xv., which appeared not in the 'Transactions' but in the 'Journal' of the Academy of Nat. Sci. Philad. (vol. i. 2nd ser., 1847–50, part ii., August 1848, p. 135, pl. xv.). This plate represents undoubtedly a specimen from Liberia (St. Paul's River: *MacDowell*), as is proved by the series in the Leiden Museum from Liberia (*Buttikofer & Sala*) and Sierra Leone (*Demery*). I do not know for what reason Reichenow should doubt the origin of Cassin's type-specimen ("Fundort St. Paulsfluss irrthümlich," Vög. Afr. ii. p. 267, note) and refer *O. albocristatus* of Cassin to specimens from Lower Guinea—an erroneous view in which Dr. Sharpe has followed him. Of course, Cassin himself had wrongly identified specimens from the Gaboon with the form from Liberia, but

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* "Ueber die Arten der Bucerotiden Gattung *Ortholophus*, Grant," in Notes from the Leyden Museum, vol. xxiii. (May 1903) p. 195.

I think that their specific differences are clearly pointed out in my review. As Cassin's name "*albocristatus*" was bestowed on the Liberian species, the southern form (Camaroon to Congo) must stand as *O. cassini* Finsch.

I am, Sirs, yours &c.,

Braunschweig, O. Finsch.
January, 1905.

Sirs,—I wish to draw attention to two errors in our paper which appeared in 'The Ibis' last month on the "Nesting of Birds in Fohkien."

(1) The footnote on page 62 is only the *first* paragraph of the note, as originally written.

The *last* paragraph on page 61 and the *first* paragraph on page 62 should have appeared as the *second and third* paragraphs of the footnote, and *not* in the body of the article at all.

The footnote would then read thus:—

"The egg figured in Cat. Eggs Brit. Mus." &c.

"This egg by some mischance" &c.

"It is, however, undoubtedly" &c.

As it now stands the footnote and the body of the article contradict each other.

It was one of the eggs of the clutch mentioned in the first paragraph of the article on *Rhynchæa capensis* (p. 61) that accidentally got into the British Museum along with some eggs presented by me in 1894 or 1895, and was unfortunately figured in the Egg-Catalogue.

The somewhat abnormally marked egg taken from the oviduct of the bird shot on August 31st was presented to the Museum in 1903.

(2) In the footnote on page 51 the word "these" has been inserted before "Cuckoos."

In the MS. this note was placed after the article on *Centropus sinensis*, and was intended to refer to Cuckoos generally. The word used was "the," *not* "these."

As the note stands it refers only to *Cuculus canorus* and *C. intermedius*. I once, however, obtained a clutch of the eggs of *Staphidia torqueola* in which was an egg that appeared to belong to one of the smaller Cuckoos. It certainly was not the egg of either of the above-mentioned species.

I am, Sirs, yours &c.,
C. B. Rickett.

Lostwithiel, Cornwall,
2nd February, 1905.

Sirs,—I think that you will be interested to hear of a rather remarkable ornithological discovery—or rather *re*-discovery—which was made in August of last year by some collectors who were sent to the Loochoo Islands by Mr. Alan Owston—a naturalist here.

In 1850 a blue Jay was described by Bonaparte, under the name of *Garrulus lidthi*, from two specimens which were said to have been obtained "in the interior of Japan" (P. Z. S. 1850, p. 80, pl. xvii.). Since that time this bird has entirely escaped scientific observation, although it has been eagerly sought for by collectors. Ultimately so much doubt was thrown on the existence of any such species in this part of the world that later lists of the Avifauna of Japan make no reference to it. Now it has been found on Amami-uo-Oshima, one of the Loochoo chain situated in 28° 20′ N., whence the fine series which I have just seen was obtained. Mr. Owston tells me that his collectors visited all the principal islands lying between Formosa and Kiushiu during the past year; but this Jay was found only on the island above mentioned.

I am, Sirs, yours &c.,
J. Cole Hartland.

Yokohama,
25th January, 1905.

Sirs,—With reference to my article in 'The Ibis' for January 1905, on p. 68 the latitudes given for the stations Leveavuopio and Ainettivaara, which we made our headquarters, should read 68° 50′ and 68° 30′ respectively instead of 69° 50′ and 69° 30′ as printed.

I am, Sirs, yours &c.,
S. A. Davies.

Godalming,
8th March, 1905.

Sirs,—Readers of 'The Ibis' will, I think, be interested in the following description of a "Sabine's Snipe," if not in the comments thereon which I have to offer:—

Killed in November last at Fulbourn, Cambridgeshire, this bird was brought to me by Capt. Tryon, the lessee of the estate, and kindly left in my hands for description—a privilege which I much appreciate and herewith acknowledge with thanks.

It proved on dissection to be a female, and was a remarkably fine example of its kind—finer, in fact, than any specimen in the British Museum.

The general appearance of this bird above was of a velvety black mottled with brown. The under surface had the neck and breast of a tawny colour, the abdomen smoke-coloured. The crown of the head and sides of the face were black, the crown and occiput intensely so. This dark-coloured area gave the appearance of a mask, recalling that of the Black-headed Gull. The feathers on the neck were black, with tawny-brown tips and a subterminal bar of brown—a combination giving a mottled appearance. As the mantle was approached the black extended forwards along the shaft, so as to break up the brown tip into two spots. The feathers on the mantle—which were peculiarly elongated—bore a horseshoe-shaped bar of brown at the tip and three or four somewhat wavy bars of the same colour at short distances down the vane. As the base of the feather was approached these bars grew shorter, and terminated in the form of spots on the free edges of the vane. The rump-feathers were tipped with tawny brown, marked with three or four bars of the same colour at equal distances along the vane. The scapulars resembled the mantle-feathers. The wings on the upper surface had the major coverts and secondaries tipped with tawny brown. The median coverts were tipped with brown, and had a subterminal bar of the same colour. Most of the minor coverts were tipped with tawny brown; median and marginal coverts dull black. The inner primaries and outer secondaries shewed a tendency to develop brown bars at the tips. The long inner secondaries had the outer webs strongly *barred* with brown, the inner webs only faintly so. The minor and marginal coverts of the under surface of the wing were dull black. *Axillaries black*, with a greenish iridescence, and in certain lights shewing faint, barely perceptible traces of the normal barring so characteristic of these feathers. In this case the barring was of the close type.

There were fourteen tail-feathers. These were pointed, had black tips, and an irregular subterminal bar of black, the ground-colour being tawny brown. The base of the feather was black; and this colour extended forwards to within a short distance of the subterminal bar as a roughly triradiate wedge, the median radius running along the shaft.

The neck-feathers of the under surface were tawny brown with dull black shafts, giving a mottled appearance. These feathers extended upwards behind the auriculars as far as the eye, thus cutting off the continuity of the mask between the face and occiput.

The breast-feathers resembled those of the neck, but had in addition two bars of dull black across the vanes. Feathers of the abdomen smoke-coloured inclining to sepia.

Under tail-coverts tawny brown, with broad double bars of black across the webs.

The colour of the bill was brown, black at the tip, while the legs and toes were bluish green: these colours, however, were, it must be remembered, examined four days after death.

Though originally described as a distinct species, "Sabine's" Snipe (*Scolopax sabinii* of Vigors) is now, by common consent, regarded as a melanoid variety of the Common Snipe (*Gallinago cœlestis*). But this description hardly expresses the truth, inasmuch as a merely melanoid variety should still shew traces through the dark pigment of the normal plumage pattern. Save in the case of the axillaries, however, neither this example nor the specimens of this bird in the British Museum indicate any such traces. In the matter of the axillaries, considerable variation seems to obtain between the various known examples of this bird.

Some of the so-called "Sabine's Snipes" undoubtedly come within the category of melanoid varieties, inasmuch as they differ from normal Snipe only in the intensity of their pigmentation. But to others this description will not apply. As my friend Mr. J. L. Bonhote has pointed out to me, the birds last referred to differ absolutely in the pattern of the plumage, as, for instance, in the absence of the longitudinal stripes on the head and back; and at the same time, it is significant to note, they resemble a quite distinct species—to wit, the Solitary Snipe (*Gallinago solitaria*). They are to be regarded as instances of mutations or discontinuous variations.

Yours &c.,
W. P. PYCRAFT.

British Museum (Natural History),
Cromwell Road, S. Kensington,
13th March, 1905.

SIRS,—I notice a mistake on p. 144 (*suprà*) of 'The Ibis,' which you will perhaps correct if you think it necessary. It was not my father, Sir Joseph W. Pease, but my uncle, Mr. John William Pease, who bequeathed his Bewick Collection to the city of Newcastle.

Yours &c.,
ALFRED E. PEASE.

Barberton, Transvaal,
18th February, 1905.

SIRS,—A beautiful male example of the Meadow-Bunting (*Emberiza cia*) was captured alive at Perry Woods, near Faversham, Kent, about February 14th last, out of a flock of Yellow and other Buntings. It was sent to London as a "peculiar Yellowhammer," but was seen and identified by Mr. G. E. Weston, into whose possession it quickly passed. This is the third occurrence of the Meadow-Bunting in Great Britain, both the previous records being for October 1902.

Yours &c.,
C. J. CARROLL.

Rocklow, Tethard,
Co. Tipperary,
26th March, 1905.

The Fourth International Ornithological Congress.—The meeting of the Fourth International Ornithological Congress, under the Presidency of Dr. R. Bowdler Sharpe, will take place, as announced in our last number, in June next, and its office and headquarters will be at the Imperial Institute, South Kensington. H.R.H. the Prince of Wales, K.G., has graciously accepted the post of Patron, and H.R.H. Ferdinand of Bulgaria and Dr. Alfred Russel Wallace, F.R.S., will be Honorary Presidents. Mr. C. E. Fagan, of the Natural History Museum, South Kensington, has been appointed Treasurer, while Dr. E. J. O. Hartert (Zoological Museum, Tring) and Mr. J. L. Bonhote (Ditton Hall, Cambridge) will act as Secretaries. The General Committee contains the names of many of the best-known Ornithologists throughout the world who are likely to be able to attend the meeting.

The first meeting of the Congress will be held on Monday, June 12th, at 9 P.M., when there will be an informal reception at the Imperial Institute. A General Meeting will take place next day at 10 A.M., and the five Sections (Systematic Ornithology, Migration, Biology, Economic Ornithology, and Aviculture) will assemble at 3 P.M. on that day. The Sections will meet again at 10 A.M. and 3 P.M. on Wednesday, June 14th, and in the evening of that day there will be a conversazione at the Natural History Museum. Thursday, June 15th, will be devoted to an excursion to the Zoological Museum at Tring, where the Members will be the guests of the Hon. Walter Rothschild, M.P. On Friday, June 16th, there will be a General Meeting of the Congress at 10 A.M. In the afternoon the Lord Mayor of London will receive the Ornithologists at the Mansion House, and in the evening the British Ornithologists' Union will entertain them at dinner. On Saturday, June 17th, the Sections will meet in the morning (10 A.M.), and the concluding General Meeting will take place in the afternoon of the same day.

For the first three days of the following week excursions will be arranged—on Monday (June 19th) to Woburn, on Tuesday (June 20th) to Cambridge, and on Wednesday (June 21st) to Flamborough Head in Yorkshire.

Subscriptions to the Congress (£1 = 20 mks. = 25 frs.) should be paid to the Treasurer.

The Secretaries will be glad to receive notice of all communications to be offered to the Sections, in order that the necessary arrangements may be made.

New Birds from Tibet.—We are glad to find that some additional knowledge of the Tibetan Avifauna is likely to be one of the results of Sir Frank Younghusband's march to Lhasa. Mr. Dresser has already described before the Zoological Society three new and distinct species of Passerine birds, of which specimens were obtained by Col. Waddell, C.B., in the Tsang-po Valley, near the Chuksan Ferry, at an elevation of about 12,100 feet above the sea-level. These were named *Babax waddelli*, *Garrulax tibetanus*, and *Lanius lama*. Besides these, we understand that a good collection of birds was made by Captain Walton of the Indian Medical Service, who accompanied the expedition as Naturalist. This collection was left at Calcutta, but is to be sent home to South Kensington for determination, while the question of its ultimate disposition, we are informed, is not yet settled.

The Nehrkorn Collection of Birds'-Eggs.—As we learn from the Report of the 54th Anniversary Meeting of the "Deutsche Ornithologische Gesellschaft" (J. f. O. 1905, p. 255), Herr Nehrkorn has presented his famous Collection of Birds'-Eggs to the Zoological Museum of Berlin. As is well known to every ornithologist who has visited the city of Brunswick, and to many others, Herr Nehrkorn was the owner of one of the largest and best collections of birds'-eggs in existence, and its acquisition has enormously increased the extent of the series at Berlin. A catalogue of the Nehrkorn Collection was published in 1899 (see 'Ibis,' 1899, p. 462). It is now proposed to prepare a new edition of this catalogue.

Birds in the Insect-house at the Zoological Gardens.—There are some very beautiful birds now in the insect-house at the Zoological Society's Gardens, which are well worthy of examination. One of a pair of the pretty little Japanese Tits (*Parus varius*), received on the 16th of February, 1903, is still surviving and in excellent condition. With it is associated an example of the brilliantly-coloured Silver-eared Mesia (*Mesia argentauris*), presented by Mr. E. W. Harper, F.Z.S. Another rare and beautiful bird presented by the same generous donor is the Blue-winged Siva (*Siva cyanoptera*). Other remarkable birds in the insect-house at the present time are Cuvier's Podargus (*Podargus cuvieri*) and the Golden-throated Barbet (*Cyanops franklini*), besides a very lively Hoopoe (*Upupa epops*). The two male specimens of the King Bird-of-Paradise (*Cicinnurus regius*) received last year remain much in the same plumage as when they arrived, but the examples of the Greater and Lesser Paradise-birds are in (more or less) full dress.

The Glossy Ibises in the Zoological Gardens.—It is not generally known that the Glossy Ibises which breed every year in the Great Aviary in the Gardens of the Zoological Society are a hybrid race between *Plegadis falcinellus* and *P. guarauna*, but such is the case. The foundation of the present flock of Ibises was a series of 7 specimens of *P. guarauna* received from Argentina in January 1893. To these were added in August of the same year 12 examples of *P. falcinellus* obtained from the marshes of the Guadalquivir, and presented to the Society by the late Lord Lilford. The two flocks made friends at once, but did not begin to breed until 1895, when several nests were made, three young being hatched on June 10th. The Ibises continued to make nests every year after this, and young birds were produced in 1896, 1898, 1900, 1901, and 1904. But it will easily be understood that, with Gulls, Sheathbills, and other hungry birds of a predaceous disposition in the Aviary, nestlings often disappear.

The Emperor Penguin.—The Friday-evening lecture at the Royal Institution on January 27th last was delivered by

Dr. Edward A. Wilson, Assistant Surgeon of the 'Discovery,' who, in an address on the "Life-history of the Emperor Penguin" (*Aptenodytes forsteri*), gave an interesting account of some of that bird's peculiarities. He said that before the National Antarctic Expedition nothing was known of its life-history, except that it did not leave the ice; and the only one of its eggs that had been seen had a somewhat shaky history. Though the Penguin had now lost its wings, there were reasons to believe that at one period its ancestors had been able to fly; thus it still retained the habit of tucking its head under its wing when asleep, although that wing was about as comforting as the lid of a cigar-box. Still, this habit shewed signs of losing its force, for sometimes a Penguin was seen to be asleep with its head drawn down on its neck—a more suitable attitude from the point of view of protection from the cold. The egg or chick was carried about and kept off the ice by being supported on the foot of the parent, but the lecturer objected to the use of the word "pouch" in this connection; a fold or lappet of heavily feathered skin did fall from the parent's abdomen over the chick, which might sometimes be quite concealed, but the word "pouch" was not an accurate description of the arrangement. At the Penguin-rookery which Dr. Wilson visited at Cape Crozier he reckoned that the mortality of the chicks was about seventy-seven per cent. Of those that died he should suppose that no less than half were killed by kindness. Adult Penguins had an overpowering desire to sit on something, and as they were in numbers largely in excess of the young, whenever a chick appeared there was a wild rush for the privilege of nursing it, and in the struggle the chick often came to harm. The young Penguin, born in the coldest month of the Antarctic winter, shed its down when five months old, and a year later had a second moult, after which the adult bird appeared in all its glory.

The lecture was illustrated by a number of photographs shewing Emperor Penguins singly and in groups, their rookery at Cape Crozier, and their development from the egg to full growth.—*Times,* Jan. 28, 1905.

Ornithologists in Foreign Parts.—We have no direct news of Lieut. Boyd Alexander, but we are informed that he is still at Lake Tchad or in its immediate vicinity. He arrived there in October last, and accounts of his journey across Eastern Nigeria have been published in 'The Times' of January 22nd and in the 'Geographical Journal' for February last (vol. xxxv. p. 176). He had suffered the great misfortune of losing his brother, Capt. Claud Alexander, the head of his surveying-party, who had succumbed to an attack of enteric fever.

Mr. A. E. Pratt, a well-known collector, who passed two years in the Owen Stanley Range of New Guinea in 1902–3 (see Bull. B. O. C. xiv. p. 69), and on his return brought home fine examples of several species of Birds-of-Paradise, has left again for New Guinea, accompanied by his two sons. On this occasion he proposes to penetrate into the Charles Louis Range in Dutch New Guinea, which is quite a *terra incognita*. He will proceed first to Dobbo, the port of the Aru Islands, and thence cross to the River Outanata, on the opposite coast of New Guinea, where there is a Dutch Settlement. Mr. Pratt, we are told, has prepared for publication an account of his former journey, which is now passing through the press, and will, no doubt, contain interesting particulars concerning the Birds of New Guinea.

Mr. Douglas Carruthers has completed his engagement at the American College in Beirut, and has put the collection of native birds into good order; he now proposes to go, accompanied by a friend, into the Syrian Desert about Palmyra, and try to make a complete collection of the mammals and birds of that little-known district. On his way back he will probably make a stay on some of the highest points of the Anti-Lebanon.

Mr. Walter Goodfellow has started again for the East, and was at Singapore last Christmas on his way to make another excursion into the mountains of Southern Mindanao, where he is sure that more novelties remain to be discovered. He could hardly expect to find another *Goodfellowia* *miranda* *, but there is no knowing what still remains hidden in the recesses of this wonderful group of mountains.

Mr. C. W. de Vis wrote to us from Brisbane on Dec. 22nd last that he was intending to resign his appointment in the Queensland Museum, and would probably return to England. He had prepared, in conformity with our suggestion, a list of the birds of British New Guinea as then represented in the Queensland Museum, but we have not yet received it. We trust that it may shortly reach us, as it would be a very useful piece of work.

Mr. E. Degen has recently left England for Uganda in company with Prof. Minchin's mission for the further investigation of the "Sleeping Sickness," which appears to be making great havoc among the natives in certain parts of the Protectorate. He will collect specimens for the British Museum.

It will be seen, therefore, that ornithology has a good many irons in the fire in different parts of the world, but there is room for more. An easy and attractive expedition would be that to North-western Rhodesia by the new railway now open to Victoria Falls, whence the extension of the line already in progress might be followed to Kalomo and the Copper-districts beyond. The high lands to the north of this country, which form the water-parting between the Zambesi and the Congo, have never been touched, we believe, by the collector, and would be sure to furnish much material of great interest.

The new Migration Committee of the B. O. C.—It may not be known to all Members of the Union that a Committee of the B. O. C. has lately been appointed "to collect evidence concerning the arrival and the lines of dispersal within the British Islands of the commoner summer migrants." Mr. J. L. Bonhote (c/o The Zoological Society, 3 Hanover Square, London, W.) has undertaken the duties of Secretary to the Committee, and will be glad to supply schedules to those willing to record their observations or seeking further information upon the subject.

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* Bull. B. O. C. xiv. p. 11.

The Royal Society for the Protection of Birds.—The General Meeting of the Royal Society for the Protection of Birds for the present year was held on the 21st of February last. Her Grace The Duchess of Portland, the President, was in the Chair, and was supported by many distinguished Bird-lovers, amongst whom were several of our best-known Ornithologists. The Report of the Council gave a very good account of the present condition and future prospects of the Society, which had received an addition of 439 annual subscribers during the past year. The chief events of the year had been the Incorporation of the Society by Royal Charter and the passing of two Acts of Parliament—one for rendering the employment of the "poletrap" illegal, and the other for extending the operation of the Birds-Protection Acts (with certain limitations) to St. Kilda. But various minor measures relating to the protection of Bird-life had been taken, and were mentioned in the Report. The main object of the Society, to put it shortly, is, in the words of Sir Edward Grey used on a former occasion, "to prevent the world from being impoverished and part of its beauty from being lost by the destruction of wild birds." We believe that all members of the B. O. U. join cordially in this wish, and we urge them to give their support to this excellent Society, the headquarters of which are at 3 Hanover Square, London.

New Bird-Books in preparation.—We have received prospectuses of several new ornithological works shortly to be published or in preparation. Mr. Porter announces the issue of a work by Mr. J. I. S. Whitaker on 'The Birds of Tunisia,' in two volumes, royal 8vo, of which the first, we believe, is almost ready, also of a volume on the 'Ornithology of the Bahamas' by Mr. J. Lewis Bonhote, which will contain an appendix on the Mammalia, Lepidoptera, and Arachnida of that group of islands. Mr. H. E. Dresser sends us a prospectus of a work on "the Eggs of the Birds of Europe," which it is proposed to issue in quarto, uniform with his 'Birds of Europe,' and which will be published in about 20 parts at intervals of two months.

The executive Committee of the Yorkshire Naturalists' Union announce a work on the birds of that county by Mr. Thomas H. Nelson, assisted by Messrs. Eagle Clarke, F. Boyes, and other well-known observers. From America we have received the announcement of a new (fifth, revised) edition of the late Dr. Elliott Coues's well-known 'Key to North-American Birds,' first published in 1872, the MS. of which was finished shortly before his death. We believe that copies of this work are already on sale. The publishers are Dana, Este & Co., of Boston.

Mr. Radcliffe Saunders's Collection of Birds'-Eggs.—The cabinets of the Natural History Museum have just been enriched by a generous donation from Mr. W. F. Radcliffe Saunders, a well-known private collector, who has devoted his attention to Palæarctic species. In round numbers the gift consists of 10,000 eggs—9948, to give the exact figures—and 165 nests with full clutches. As there was a former gift by Mr. Radcliffe Saunders of about the same number of eggs, and the Museum cabinets are estimated to contain nearly 100,000 specimens, his contributions may well be taken as, numerically, one-fifth of the whole—*Field*, April 8th, 1905.

Death of M. Adolphe Boucard, C.M.Z.S.—A figure formerly well known to many of the members of the B. O. U. was that of M. ADOLPHE BOUCARD, of Oakhill, Spring Vale, Ryde, Isle of Wight, who died at his son's residence at Hampstead on the 15th of December last. Boucard, who was of French nationality, but well acquainted with Spanish and English, was born in 1839. When scarcely twenty years of age he left Europe on his first collecting-tour to Chili, California, and Nicaragua. He subsequently spent many years in Southern Mexico, where he remained from 1854 to 1867. The first ornithological results of this expedition were given to the world in Sclater's memoir on the birds collected by Boucard during his sojourn in the province of Oaxaca, which was published in the 'Proceedings' of the Zoological Society of London for 1859. This was followed by other papers in the same journal relating to Boucard's collections, some of which were from his own pen. Another expedition was made by Boucard in 1876, when he went to Panama, Costa Rica, Guatemala, and California. It was during this voyage that he discovered at Punta Arenas, in Costa Rica, the fine and rare Humming-bird (*Arinia boucardi*) which appropriately commemorates his name. Boucard was an indefatigable collector, and made *excellent* bird-skins, which it was always a pleasure to examine.

After his return from America, Boucard settled in Paris for some years and published many memoirs on birds and on coleoptera, of which he was a devoted student. In 1878 he read a very good account of his Costa-Rican collection of birds before the Zoological Society of London, and described, amongst other novelties, a remarkable Finch (*Zonotrichia vulcani*) obtained on the volcano of Irazu, at a height of 10,000 feet. Amongst other works, he published in 1876 a 'Catalogus Avium hucusque descriptorum,' with references to the names of 11,051 species, a work on the 'Genera of Humming-birds' (1893-95), and a volume of travels (1894). A new periodical called 'The Humming-bird' was founded by him in 1891 and carried on for five volumes.

The latter part of his life (since 1893) Boucard passed principally at his villa near Ryde, in the Isle of Wight, whence he sent liberal donations from his large collections to various institutions. To the Muséum d'Histoire Naturelle at Paris he is stated to have given the greater part of his large series of books and birds, while he distributed the duplicates to the U.S. National Museum and the Royal Museums of Madrid and Lisbon.

THE IBIS.

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XXIV.—*A Contribution to the Ornithology of the Egyptian Soudan.* By A. L. Butler, F.Z.S., M.B.O.U., &c., Superintendent of Game Preservation, Soudan Government.

(Plate VII.)

The following paper is written in response to the request of the Editors that I would put together for 'The Ibis' such notes on the birds of the Soudan as I have made during a residence of four years in the country. In excuse for its shortcomings, I can only say that I have had very little time to give to ornithology, that I have not been able to devote any trips entirely to collecting, and that I have not resided, but have only travelled in the Provinces, where the "big game" has had most of my time and attention. During the rains—the principal breeding-season of birds in the Soudan,—owing to the increased difficulty of moving freely with transport animals, I have done very little travelling, and have consequently obtained but few notes on nidification. There is probably in the Nile Valley no better spot for observing migration than Khartoum, as representatives of all the passing species seem to drop into its gardens for a rest; but, unfortunately, I have generally been absent on leave until the autumn migration had commenced, and in the spring I have usually been travelling in districts remote from the river. With these excuses, I give my notes in the hope that they may interest some, at least, of the readers of 'The Ibis.'

For kind assistance in identifying specimens I am much indebted to Captain Shelley, Mr. Ogilvie-Grant, Dr. Bowdler Sharpe, Mr. N. C. Rothschild, and Dr. Hartert. To Mr. G. B. Middleton, of the Steamers and Boats Department of the Government, I owe all the specimens mentioned from Roseires and some interesting notes.

To avoid repetition, and to save space, it will, I think, be sufficient, instead of giving references under the name of each bird, to mention here the following papers on collections of birds recently made in the Soudan:—

Captain S. S. Flower. Notes on the Fauna of the White Nile. P. Z. S. 1900, p. 950.

Mr. H. F. Witherby.—An Ornithological Expedition to the White Nile. Ibis, 1901, p. 237.

The Hon. N. C. Rothschild and Mr. A. F. R. Wollaston.—On a Collection of Birds from Shendi, Sudan. Ibis, 1902, p. 1.

Mr. W. R. Ogilvie-Grant and Mr. R. M'D. Hawker.—On a Collection of Birds made on the White Nile. Ibis, 1902, p. 393.

The specimens which I have from time to time obtained are mentioned under their names. I have, however, not aimed at making a representative collection, and have shot very few of the larger and more easily identified species.

I do not think that any further introductory remarks are necessary. For the length to which this paper has extended my apology must be that there are so many birds to notice, and that I have tried to give the local distribution of each species as well as I could.

1. Nectarinia metallica (Licht.).

a. ♂. Khartoum, Dec. 12, 1902.

b. ♂. Bara, April 26, 1904.

The Metallic Sun-bird is common and widely distributed. I have met with it at great distances from water. It is very partial to the waxy flowers of the Sodom Apple (*Calotropis procera*).

2. NECTARINIA PULCHELLA (Linn.).

a. ♂. Khartoum, Dec. 17, 1902.
b. ♂. R. Setit, May 7, 1903.
c. ♂. ,, May 13, 1903.
d. ♂. Roseires, May 20, 1904.

This lovely little Sun-bird is abundant and widely distributed. Eastwards I have found it plentiful at Gallabat, on the Atbara, and on the Setit; I have seen it as far west as Bara in Kordofan; southwards it ranges all along the White Nile and Bahr-el-Ghazal; at Khartoum it is common in the gardens; but it does not, I think, occur much further north.

In the bush it feeds principally at the flowers of the acacias, while in Khartoum those of the "Horse-radish tree" (*Moringa pterygosperma*) and the "Indian Shot" (*Canna*) are the chief attraction.

I have seen males in full plumage in every month from September to June, and during the remaining months of the year I have generally been away. In October and November, however, the majority of the males are in transitional plumage.

In October 1904 I was successful in keeping one of these lovely little creatures alive for ten days, at the end of which it escaped in perfect health. I placed it by itself in a cage about a yard square and fed it as follows:—At night I used to put a saucer of honey thinned with water close to my candles. This soon became full of midges and other tiny insects. In the morning I used to pick a bunch of scarlet *Canna*-flowers, doctor them liberally with the mixture, and place them in the cage. The bird fed freely at these from the first and became very tame, sometimes settling on the flowers while they were still in my hand. During its captivity a female used regularly to visit the cage and feed at the flowers placed outside it. Eventually the male bird escaped, and two days afterwards the pair commenced a nest on a *Parkinsonia*-tree just outside my verandah. Unfortunately they were so much disturbed by some workmen employed just at that spot that the nest was never completed.

3. Parus leucomelas Rüpp.

a. ♂. Roseires, Blue Nile, May 20, 1904.

I frequently saw the White-winged Black Tit on the Rahad and Dinder Rivers in March and April 1903. It was generally in pairs or in parties of three or four, which played a sort of "follow-my-leader" game from tree to tree. In April I found a nest-hole about two feet from the ground in an acacia, but the tough wood was too much for my hunting-knife, and I had to leave it.

The skin was kindly obtained for me by Mr. G. B. Middleton.

Ægithalus punctifrons Sundev. I have never seen. I think that I must have overlooked it.

4. Motacilla vidua Sundev.

a. ♀. Khartoum, Oct. 7, 1902.

b. ♂. R. Setit, May 8, 1903.

Quite one of the most beautiful members of its family, the White-winged Wagtail is very local, frequenting only certain rocky reaches of the Nile and the smaller rivers. The localities in which I have met with it are the Shabluka Cataract (40 miles north of Khartoum) and the gorges of the Upper Atbara and the Setit. In these places it is abundant. I once shot a specimen on the river-front at Khartoum, but I never saw another there.

In May the birds were all in pairs on the Setit, and apparently breeding.

5. Motacilla alba Linn.

Seven specimens, ♂ and ♀, from Khartoum.

The White Wagtail is one of the most abundant of the cold-weather visitors. No migrant arrives so regularly to time, or in such numbers at once. It is a late comer and stays late into the spring. At Khartoum in 1901 it arrived on Oct. 19th; in 1902 on the 18th; in 1904 on the 18th. (I was away in 1903 in October.) On the evenings before these days not one was to be seen; in the mornings the birds were in hundreds everywhere. The full breeding-plumage is assumed very early; I have seen examples with the throat completely black as early as February 4th. The change is very rapid, and appears to be a moult of the head and neck only. They spread all over the Soudan from east to west and from north to south.

I noticed in Kordofan that every desert-well had one or two of these Wagtails at it. These wells are in some cases as much as fifty miles apart; they are timbered over, with an opening perhaps 18 inches in diameter, while the water may be 200 feet down. The birds can find them only by following the sheep and goats, which are watered daily in wooden troughs at the well's mouth, and all the chance of a drink they get is by dodging in between the scuffling cattle! Their presence at these remote wells struck me as interesting in the extreme, and shews the wonderful manner in which birds find their way to water. It must not be supposed that a desert-well in Kordofan represents anything in the nature of an oasis. The Arabs there undertake no cultivation whatever, except in the rains, but subsist on their stored grain and on their flocks, which manage to eke out a living by nibbling thorn-bushes and scanty tufts of dry grass, and can go without water for three days. Beyond the presence of these animals there is no surface-indication of water at all.

The latest date on which I have noticed this Wagtail is May 6th.

6. Motacilla melanope Pall.

The Grey Wagtail is a very scarce visitor. I think that I have seen it here only twice. From March 15th to March 22nd, 1902, one frequented our steamer, which during that time was lying at a wooding station on the Bahr-el-Ghazal, and came on board very fearlessly; at the end of September 1904 one appeared for a few days in my garden at Khartoum.

7. Motacilla flava Linn.

a. ♂. Khartoum, March 15, 1901.

8. Motacilla melanocephala Licht.

a. ♂. Khartoum, Dec. 2, 1902.

9. Motacilla campestris Pall.

a. ♂. Khartoum, Oct. 1904.
b. ♀. ,, ,, ,,

These three species of Yellow Wagtails arrive at Khartoum at the end of August and beginning of September, young birds greatly outnumbering the adults, while during the winter they spread over the rivers of the whole country wherever there are mud-flats, short grass, or cultivation. All three species have the same habits and associate together promiscuously.

In March and April the birds which have gone further south return and swell the numbers of those which have wintered at Khartoum. By this time the full breeding-plumage has been assumed, and the species can much more readily be distinguished. The gathering of Wagtails at Khartoum before the northward migration takes place is a wonderful sight. For mile after mile the strip of short grass which fringes the White Nile is covered with them, their bright yellow breasts making a most pleasing display. They gradually disappear by the end of April, though some linger well into May.

10. Anthus trivialis (Linn.).

The Tree-Pipit is a regular, but not very common, winter visitor. It is one of the later migrants to reach Khartoum, generally appearing in the gardens during the last week in October.

11. Anthus campestris (Linn.).

a. ♂. Khartoum, Oct. 23, 1902.
b. ♀. ,, Oct. 28, 1902.
c. ♂. ,, Oct. 18, 1902.

The Tawny Pipit is fairly common around Khartoum from October to March. I saw a few specimens, and shot one for identification, near Gallabat on April 13th, 1903.

12. Anthus cervinus (Pall.).

a. ♂. Khartoum, Dec. 22, 1902.

The Red-throated Pipit is an abundant winter visitant, great numbers frequenting the river-banks in company with White and Yellow Wagtails. In February and March the birds congregate in immense quantities along the White Nile at Khartoum before departing north. I have not noticed them myself before October. I have seen examples of this species as far south as Meshra-el-Rek, on the Bahr-el-Ghazal (March 8, 1902).

13. Alæmon alaudipes (Desf.).

a. ♂ ; *b.* ♀ ; *c.* ♂ ; *d.* ♂ jr. ; *e.* ♂ jr. Omdurman, Nov. 28, 1902.

f. ♂ ; *g.* ♀ ; *h.* ♀ . Khartoum, Dec. 12, 1902.

This fine Lark is tolerably common near Khartoum and Omdurman, though it keeps very much to particular spots, and it is necessary to know where to look for it. The following note is from my diary :– "Went over to Omdurman with D.-H. to look for this Lark. The desert here is of quite a different nature from that on the Khartoum side of the river, with a hard, very level, dark, gravelly surface. We first came on a single bird, a male, which I shot. Subsequently we met with at least twenty individuals in fairly close company, but mostly keeping in pairs. The birds run very swiftly, their little feet twinkling under them like a Courser's ; their flight is very undulating, the white on the wings shewing conspicuously. They were frequenting some mud-ruins, on the low walls of which they settled constantly. They were very tame and confiding."

I have also seen the bird on the softer, dustier desert behind Khartoum ; this, however, is by no means, like Omdurman, a sure find.

The extent of the black bar across the secondaries varies considerably.

Among the specimens recorded above :—

a (♂ ad.) had the secondaries barred right across, but the bar was interrupted at the shaft, occurring on the outer web in the shape of an oval mark, edged with buff on the margin of the feather.

b (♀). Secondaries barred across the outer web only ; inner web white.

c (♂ ad., breeding). Secondaries with an uninterrupted bar right across.

d & *e* (young ♂♂). Secondaries tinged throughout with fawn-colour; barred right across.

14. Calandrella brachydactyla (Leisler).

a. ♀. Khartoum, Oct. 23, 1902.
b. ♂. " Nov. 21, 1902.
c. ♀. " Feb. 10, 1902.

The Short-toed Calandra Lark winters in the deserts of the Soudan in large flocks, being perhaps numerically the most abundant of all our migratory birds. It becomes plentiful near Khartoum about the middle of October (it appeared in 1902 on the 18th), and is still common at the end of March.

15. Mirafra cantillans Blyth.

a. ♀. Gedaref, April 27, 1901.
b. ♂. " May 16, 1903.
c. ♂. " May 18, 1903.
d. ♂. " " "

Abundant round Gedaref, especially on low grassy hills.

Mr. Hawker's *M. marginata* has been shown by Messrs. Ogilvie-Grant and Reid ('Ibis,' 1901, p. 628) to have been founded on a bright, freshly moulted example of this species.

16. Mirafra cordofanica Strickl.

a. ♀. Um Bosha, May 5, 1904.
b. ♀. " " "

I have met with the Kordofan Bush-Lark only on the road from El Duem to El Obeid, where, from Hashaba to Um Bosha, it is common on the red sandy soil among "Heskanit" grass. The cream-coloured margins of the feathers of the upper plumage are bright and conspicuous in newly moulted examples, but later are partly lost by abrasion. Capt. H. N. Dunn obtained the bird at the Agagch Wells, Western Kordofan, in November 1902.

17. Mirafra albicauda Reichen.

a. ♂. Gedaref, April 27, 1901.
b. ♂. ,, ,, ,,
c. ♂. ,, May 18, 1903.

The White-tailed Bush-Lark is common on the plains all round Gedaref, in the Kassala Province. On the White Nile, Mr. Hawker obtained it between Kaka and Fashoda; further south I saw it on the Bahr-el-Ghazal in March 1902. A dark-plumaged bird, it belongs entirely to the districts of black cotton-soil, away from which I have never seen it. Round Gedaref it was often in company with *M. cantillans*. Like that species it soars high and sings beautifully. It has a habit, especially at the first signs of dawn, of rising a short distance into the air and making a very curious purring or drumming noise with its wings. Pease ('Ibis,' 1901, p. 629) attributes a similar habit to *M. fischeri* in Abyssinia, describing the sound as a muffled rattling. My specimen *c*, shot in May, was in breeding-condition.

18. Galerita cristata (Linn.).

a. ♀. Assouan (Egypt), Jan. 27, 1901.
b. ♀. Khartoum, Feb. 5, 1902.
c. ♀. ,, Feb. 1903.
d. ♂. ,, Dec. 22, 1902.
e. ♂. ,, ,, ,,

The Crested Lark, though extending west into Kordofan, generally keeps in touch with cultivation and water, and cannot be described as a desert species. It is abundant all along the Nile to Khartoum; it follows the Blue Nile up to Wad Medani, or a little beyond, but does not, I think, reach the more wooded country further up that river; it extends into Western Kordofan, but in that thirsty land keeps to the vicinity of wells; it becomes gradually scarcer south of Khartoum, apparently not following the White Nile for more than 200 miles, if as much.

If, with such a species as this, one is to recognise as subspecies forms which, though based mainly on geographical distribution, are connected by every intermediate phase, my Assouan bird should stand as *G. c. maculata* Brehm, and the Khartoum specimens as *G. c. flava*.

At Khartoum, the typical habitat of *G. c. flava* Brehm, the bird is most often found on black alluvial soil, or among the green surroundings of irrigated crops, and a *darker* coloured plumage would harmonize better with its environment. The breeding-season appears to be from December to March.

19. AMMOMANES ARENICOLOR (Sundev.).

a. ♂. 25 miles W. of Omdurman, Jan. 1, 1901.
b. ♀. " " " " "

These pretty little Larks are not rare in the desert west and south of Omdurman, and I have also seen them from Omdurman to the Shabluka Cataract. They are generally in pairs or in parties of five or six. I never saw them on the undulating loose red-sand country of Western Kordofan; they generally keep to hard or gravelly desert.

20. AMMOMANES DESERTI (Licht.).

a. ♂? Feb. 25, 1901, Assouan (Egypt).
b. ♂. Dec. 31, 1902, 25 miles W. of Omdurman.

Lichtenstein's Desert-Lark is a fairly common bird on the low rocky kopjes or "jebels" which are scattered over the deserts of the Northern and North-Western Soudan. It is usually met with in pairs, but sometimes in small parties, which continually utter a plaintive "*tweet*" as they flit about the rocks.

The differences between the Assouan and Soudan birds, pointed out by Messrs. Rothschild and Wollaston ('Ibis,' 1902, p. 7), are shown in my two skins.

21. PYRRHULAUDA FRONTALIS Bp.

a. ♂. Hashaba, Kordofan, May 9, 1904.
b. ♀. " " " "

I found the White-fronted Finch-Lark common in the deserts west of the White Nile, as far south as Duem, and between that place and El Obeid; also on the Blue

Nile between Khartoum and Wad Medani; and north as far as Shendi.

On the bird described by Captain Shelley as *P. butleri* I have the following note:—"Dec. 30th to Jan. 3rd, 1903. Large numbers of them from Omdurman to 40 miles west of it. A very much shier bird than *P. melanocephala*, and rather hard to get at with a collecting-gun. Males have a habit of soaring 25 or 30 yards into the air, uttering a twittering call-note, and then parachuting down with wings raised above the back. I found a new nest, ready for eggs, placed against the stem of a *Blepharis*-plant. The white cheek-feathers are very long, and stand out like whiskers in a living or newly killed bird."

On the whole this is much more of a desert species than *P. melanocephala*.

Captain Flower shewed me in Cairo a cage full of living Finch-Larks, probably captured on the Red Sea coast, which he had purchased; these seemed to be of the form or species *P. melanauchen* (Cab.), differing from the Eastern Soudan bird in its narrower white forehead and black nuchal band. In some of the presumably younger individuals, however, the latter characteristic was absent.

22. PYRRHULAUDA MELANOCEPHALA (Licht.).

23. PYRRHULAUDA LEUCOTIS (Stanl.).

a. ♂. Kawa, White Nile, Nov. 16, 1902.
b. ♂. Khartoum, Dec. 2, 1902.
c. ♂. ,, Dec. 22, 1902.
d. ♂ jr. ,, Dec. 28, 1902.
e. ♂. ,, Dec. 29, 1902.
f. ♂. ,, Feb. 1903.
g. ♂. ,, ,, ,,
h. ♂. Gedaref, May 1901.
i. ♂. ,, May 17, 1903.
j. ♀. ,, ,, ,,
k. ♂. ,, ,, ,,

Mr. Ogilvie-Grant ('Ibis,' 1902, p. 411) gives a key for distinguishing *P. melanocephala* and *P. leucotis*, which, he says, owing to want of material, had been united in the 'Catalogue of Birds' (*cf.* vol. xiii. p. 637).

Owing to my inability to distinguish them with certainty, even with the aid of Mr. Grant's key, I think that I had better reunite them for the purpose of this paper!

Now, as to identification. Certainly only one species occurs at Khartoum. In this the bill is always white; the white nape-band (measured with the bill at a right angle to the breast) is ·25 of an inch in width; and the predominating colour of the lesser wing-coverts is white, though *black* feathers are always present, sometimes only four or five very small ones, but very often almost as many as the white, forming a jet-black shoulder-patch nearly an inch in length. In spite of this, the bird seems to me very close to typical *P. melanocephala*, and as such I have named my skins. It is, moreover, the same species, shot in exactly the same spot, as the birds collected by Mr. Hawker and identified by Mr. Grant as *P. melanocephala*. Captain Shelley has, however, in a list which I sent him with the skins, altered the specific name to *leucotis* in every case except in that of the White Nile bird (*a*), which he has left as *P. melanocephala*. And it was Mr. Hawker's *White Nile* birds which Mr. Grant identified as *P. leucotis*!

I cannot help thinking that all these Khartoum birds should stand as *P. melanocephala*, in spite of their having more or less black on the shoulders.

My three Gedaref birds I should undoubtedly call *P. leucotis*. These Captain Shelley did not see.

One form or another occurs almost all over the country from the Setit on the east to Western Kordofan, and as far south as Fashoda, but the exact distribution of each, or of the intermediate birds, still remains to be studied.

This is an extremely tame little bird, frequenting paths to pick up the grain dropped from donkey-loads, and barely moving out of the way of passers-by. It may be met with either in pairs or in small flocks throughout the year.

I have the following notes on its nidification:—"Khartoum, Dec. 9th, 1902. Found a nest containing one egg.

The birds were near, but, had not an Egyptian Nightjar risen at my feet and directed my eyes to the ground, I should never have noticed the nest, so exactly did it harmonize with its surroundings. It was a little pad of bits of rag, cotton-waste, string, and goat's hair, placed in the open in a depression between a brick and a piece of dried cow-dung. I revisited the place next day; there was still only one egg, which proved to be on the point of hatching. The ground-colour was greyish white, thickly speckled throughout with olive-brown and grey, forming more or less of a zone at the large end."

"Khartoum, March 18th, 1901. Killed with the same shot two males and one female, which seemed to have set up a *ménage à trois.* The hen contained a single egg, almost ready for exclusion. The other eggs in the ovary were in no way enlarged."

"Khartoum, Jan. 24th, 1903. Found a nest within a few feet of the spot where I found one on Dec. 9th last year. The cock bird was sitting when I detected the nest; he fluttered off and settled about eight feet from me. I glanced down, saw that there was one egg, and passed on. The bird ran back and reseated himself on the egg close to me. I returned in twenty minutes, and found the hen bird sitting, but she was much wilder than the cock, twice slipping off when I was twenty yards from her. I then took the egg. Nest similar to the other."

This species appears usually to lay only one egg.

24. PYRRHULAUDA BUTLERI Shelley.
(Bull. B. O. C. xiii. p. 73, 1903.)
a. ♂. 20 miles W. of Omdurman, Jan. 2, 1903.

25. PYRRHULAUDA LACTEIDORSALIS Shelley.
(Bull. B. O. C. xiii. p. 73, 1903.)
a. ♂. Khartoum, Nov. 25, 1902.

I must say that I, personally, do not consider either of these recently described species as valid.

The so-called *Pyrrhulauda butleri* was very abundant in January on red sandy ground near the wells of Fatassheh,

W. of Omdurman. I thought at the time that it was a more blue-grey-looking bird than typical *P. frontalis*, but I now doubt whether it can be separated.

P. lacteidorsalis I shot at Khartoum, associating with a flock of the ordinary *P. melanocephala*. I believe it to be nothing but a partly cream-coloured variety of that species, and I have not seen another specimen like it.

These are my humble opinions; but when doctors differ, who shall decide? Dr. Reichenow (Vög. Afr. iii. p. 368) admits *P. lacteidorsalis* as a good species, but doubts the distinctness of *P. butleri* from *P. frontalis* (l. c. p. 370). Captain Shelley writes to me that *he* considers *P. butleri* the best-marked species of the two, an opinion apparently shared by Dr. Hartert, who writes to me: "only one—the *butleri*—can be any good."

Both these tiresome little birds are now in the Tring Museum, where I hope that they will remain without further complicating the synonymy of this difficult genus!

26. EMBERIZA FLAVIGASTRA Rüpp.

a. ♂. Setit River, May 5, 1903.

b. ♀. Jebel Melbis, April 18, 1904.

This beautiful Bunting is common on the Blue Nile above Wad Medani, on the Upper Atbara, and on the Setit. I also found it numerous near El Obeid in Kordofan.

27. EMBERIZA HORTULANA Linn.

a. ♀ jr. Khartoum, Oct. 20, 1902.

A good many immature Ortolans were frequenting the gardens in Khartoum during the week in which I shot my specimen. I have not noticed the bird anywhere else.

28. EMBERIZA CÆSIA Cretzsch.

a. ♀. Khartoum, Oct. 20, 1902.

b. ♂. ,, Dec. 22, 1902.

Cretzschmar's Bunting is a very common winter visitor to the Nile Valley. Kawa on the White Nile is the most southerly point at which I have shot it. It arrives at Khartoum in small flocks towards the end of September, and is common until March, but from April to September I have never seen it.

29. Emberiza septemstriata Rüpp.

a. ♀. Setit River, May 12, 1903.

Very local. In June 1901 I shot a specimen of this Bunting on the Blue Nile near Kamlin, but, being caught in a storm that night, was unable to preserve it. I did not come across it again until May 1903, when I found it in small flocks, but rather scarce, on the rocky banks of the Setit. In January 1905 I saw a fair number on the hills at the Shabluka Cataract (the sixth).

30. Passer domesticus (Linn.)

I am afraid that I have neglected to pay sufficient attention to the distribution of the Common Sparrow in the Soudan. It is abundant in all towns as far south as Khartoum. On the White Nile it is scarcer, and I have not *noted* it beyond Kawa, but it will doubtless spread as the villages grow into towns.

I think that *P. rufidorsalis* of Brehm can hardly be called a species.

31. Passer diffusus (Smith).

a. ♂. Setit River, May 10, 1903.
b. ♂. " " " "
c. ♀. Jebel Melbis, Kordofan, April 18, 1904.

I have met with the Southern Bush-Sparrow from the Setit on the east to the Mazrub Wells in Western Kordofan, and as far south as Fashoda on the White Nile. On this river, however, it seemed scarce, whereas on the Setit and in Kordofan it was abundant. Its note is a regular Sparrow's chirp.

32. Passer luteus (Licht.).

a. ♂. Khartoum, Sept. 1901.
b. ♀. Bara, April 26, 1904.
c. ♂. " " "
d. ♂ jr. " " "

The pretty Yellow Sparrow is abundant from Berber to

Khartoum, along the White Nile to Duem (and probably further), on the Blue Nile, and in Kordofan, frequenting the cultivated lands in large flocks. Nowhere have I seen it in such numbers as at the wells of Bara, in Kordofan. There, at the end of April 1903, it had collected in tens of thousands, in company with lesser, but great, numbers of *Uroloncha cantans*. Every thorn "zariba" round the cultivated plots was perfectly yellow with them.

At Khartoum it is abundant in the summer and autumn, but little in evidence during the cold months.

The Rock-Sparrow, *Petronia pyrgita* (Heugl.), I have never seen, though I have kept a sharp look-out for it; I think that it must be either very local or very scarce.

33. SERINUS LEUCOPYGIUS (Sundev.).

a. ♂. Between Gedaref and Gallabat, May 12, 1901.

I have come across the White-rumped Serin-Finch almost everywhere I have travelled—from the Setit to Western Kordofan. It is fairly common along both the Niles, associating in flocks. It is easily recognised among other small Finches by its white rump.

About September and October it is often seen in pairs in the gardens at Khartoum, apparently breeding at that season.

34. HYPOCHÆRA ULTRAMARINA (Gm.).

a & *b*. ○ ○. Gedaref, May 16, 1901.
c. ○. Khartoum, Oct. 16, 1902.
d. ○. " Nov. 8, 1902.

The beautiful little Indigo Finch is common and generally distributed. It is a very familiar species, frequenting villages and the compounds of houses in the towns, and occasionally entering verandahs to drink from the large earthenware filters. I have seen it in full plumage in every month from August to March, but at all times of the year birds in the blue plumage are greatly outnumbered by the brown females and immature males.

It is common in the town of Khartoum.

35. Vidua serena Hart.

a. ♂. Fachi Shoya, White Nile, Nov. 14, 1902.

Appears to be rather scarce. My specimen is the only one that I have noticed in full breeding-plumage.

36. Steganura paradisea (Linn.).

a. ♂. Jebel Alatarang, June 9, 1901.
b. ♂. Jebel Ain, Nov. 5, 1902.
c. ♂. " " " "
d. ♂. " " " "
e. ♂. Kawa, Nov. 16, 1902.

The Paradise Widow-Bird is widely distributed in the Soudan; I have noted it from the Setit and the Abyssinian frontier on the east to Fashoda on the White Nile, and to El Obeid in Kordofan. I have met with males in full breeding-plumage in every month from August to December. My specimens, and all others from the Soudan which I have seen, with the exception of two caged birds from the Sobat, have the collar round the neck bright pale yellow. Stark (Birds of S. Afr. vol. i. p. 150) describes this collar as bright mahogany-red in South-African specimens, and in the plate in Dr. Butler's 'Foreign Finches' it is so represented. But in correspondence on this point the Director of the South-African Museum informs me that the specimens in the collection there have yellow collars, and do not in this particular agree with Stark's description. This variation in the colour of the collar seems quite fortuitous, and not connected with locality, as the two chestnut-collared live specimens from the Sobat were accompanied by several others which had the collar yellow.

37. Urobrachya phœnicea (Heugl.).

a. ♂. Meshra-el-Rek, March 7, 1902.
b. ♂. River Dinder, March 1903.

In February and March 1902 I found the Orange-shouldered Weaver-bird fairly common in flocks along the White Nile from Kaka to Fashoda, along the Bahr-el-Ghazal as far as Meshra-el-Rek, and on the Jur River. On the eastern side of the country I have met with it on the Dinder

River close to the Abyssinian frontier. It frequents high grass cover and keeps to the vicinity of water.

38. Pyromelana franciscana (Isert).

a. ♂. Sept. 14, 1901.
b. ♀. Gedaref, June 1901.
c. ♂. Khartoum, Oct. 18, 1902.
d. ♀. „ Nov. 7, 1902.
e. ♂ jr. Jebel Ain, Nov. 26, 1902.

This most lovely little Bishop-Finch is abundant, and generally distributed where there is dhurra cultivation. From its partiality to this grain it is commonly known as the "Dhurra Bird" among Englishmen in the Soudan. The males begin to assume the nuptial plumage of scarlet and black in August, and by the end of that month or the beginning of September some have completed the change, while others are still in a transition-stage. Between January and March they gradually change back to the brown plumage.

They breed in close company, building their nests in high grass, growing dhurra, or bushes. The nests are oval in shape, and woven of strips of fine grass, with a side entrance near the top; the building takes seven or eight days. Three or four eggs are laid, of a bright pale blue. I have seen eggs on Oct. 22nd.

In 1903 I reared seven of these birds from the nest, taking them very young and feeding them on crushed millet-seed mixed with water. They became charmingly tame, flying on to my arm when their cage was opened, and all scuffling head downwards into the tin of grain which I carried for them. The males assumed the red plumage in the following October, when eight months old, but their first scarlet livery is very much paler and duller than that of older birds.

A breeding-colony of these birds is a most beautiful sight. The males keep fluttering slowly backwards and forwards over the glossy dark green dhurra, now settling on the tallest stems, now rising into the air with every feather puffed out, until they look like living balls of black and scarlet velvet.

39. Quelea æthiopica (Sundev.).

a. ♂. Mesjid, Blue Nile, March 31, 1901.
b. ♀. Gedaref, June 1901.
c. ♂. " " "

Very common in large flights on both the Blue and White Niles. Towards the end of May 1901 these birds were in immense flights at Gedaref, drinking at pools left in the rocky khors in tens of thousands. At the beginning of June they were just beginning to assume the nuptial plumage. I have occasionally seen them in Khartoum.

40. Amadina fasciata (Gm.).

a. ♂. Doka, May 11, 1901.
b. ♂. R. Setit, May 7, 1903.

I have met with the Cut-throat Finch in large flocks near Gallabat, on the Upper Atbara and Setit, and in Kordofan.

41. Uroloncha cantans (Gm.).

a. ♀. Kawa, Nov. 13, 1902.

The African Silver-bill is one of the very commonest Soudan Finches, and I have met with it almost everywhere that I have been, from the Atbara across to Kordofan, and from Shendi southwards to Fashoda.

At the wells of Bara, north of El Obeid, in April 1904, this bird was in thousands. It may be found breeding at any time of the year, nesting in thatched roofs, date-palms, and thorn-bushes.

42. Estrilda phœnicotis (Swainson).

a. ♀. Gallabat, May 8, 1901.

The Cordon-Bleu Waxbill occurs throughout the country in suitable localities and is an abundant species. It is common all along the Blue Nile above Wad Medani, on the Rahad and Dinder, at Gallabat and on the Upper Atbara and Setit, on the White Nile, and in Kordofan.

A nest which I found at Jebel Ain on the White Nile on Nov. 15, 1902, was egg-shaped with a hole at the side, composed entirely of fine yellow grass, and placed low down at the bottom of a thorn-bush, where the same yellow grass was growing up through the thorns. It contained four white eggs.

43. Estrilda rhodopyga Sundev.

a. ♀. Khartoum, Nov. 1, 1902.
b. ♂. ,, Nov. 12, 1902.

During winter and spring this pretty little Waxbill is often to be seen in the gardens at Khartoum, keeping in small flocks and feeding on grass-seeds. It is extremely tame, and I believe that it would be possible to capture a whole party under a casting-net.

44. Lagonosticta brunneiceps Sharpe.

a. ♂. Gedaref, May 1901.
b. ♂. Khartoum, Nov. 10, 1902.

This pretty little Fire-Finch is one of the most charmingly familiar and confiding birds in the country. It appears to regard the "zeers" (large earthenware filters), which are to be found in every house in the Soudan, as a kindly arrangement of man for its particular delectation in a thirsty land, and in return frequents his verandahs without a trace of fear. It makes a charming aviary bird, and is from the first lively, fearless, and apparently happy in captivity. Being so tame it can be caught without the slightest trouble under a net propped up over some millet-seed, and if a decoy-bird is used the others will come crowding to it in a moment within a yard of the fowler. So sociable is it that on one occasion a cock settled on my arm while I was carrying a small cage containing a hen; and several times at night I have found wild birds roosting on the cage in my verandah in which I kept my tame specimens.

It seems to prefer the vicinity of human habitations to the lonely bush, and is common about most towns and villages in the Soudan, especially where there is any cultivation of lime-trees.

In the east it is common at Gallabat, Gedaref, and Kassala; in the west at El Obeid; and in the south I have seen it as far as Meshra-el-Rek on the Bahr-el-Ghazal.

45. Lagonosticta nigricollis Heugl.

a. ♂. Gallabat, April 15, 1903.

In April 1903 I found these Finches in large flocks in the khor running from Gallabat to the Atbara. They were at that time in full moult, and it was impossible to get a decent specimen. They are much more shy than the familiar little *L. brunneiceps,* and I never saw them, like that species, frequenting the villages.

46. Pytelia citerior Strickl.

a. ♂. Near Gedaref, June 6, 1901.

b. ♂. 20 miles W. of Omdurman, Jan. 2, 1903.

I have seen the Red-faced Finch from the Setit on the east to Western Kordofan and the Bahr-el-Ghazal. It is a fairly common bird in nearly every place where there are thorn-bushes. At Gedaref I found it in full moult at the beginning of May, but it was in beautiful plumage at the end of the month. It is a tame and inquisitive little bird, hopping about a tent and watching things at very close quarters.

Both my skins are referable to *P. citerior,* as also were one or two birds which I shot in Kordofan, but had not time to preserve. *P. soudanensis* I do not think that I have seen.

47. Sporopipes frontalis (Daud.).

a. ♂. Jebel Melbis, April 11, 1904.

b. ♂. Um Bosha, May 4, 1904.

Abundant in bush in the red-sand country of Kordofan. Generally common round the wells at the villages, though also met with a long way from water. It builds a large round nest of grass in a thorn-bush, the entrance being at the side. On March 31st some birds were sitting on eggs, though want of time prevented me from cutting away the thorns and obtaining them. Small parties of four or five roost together in their old nests at night.

48. Textor albirostris (Vieill.).

a. ♀. Bara, Kordofan, April 28, 1904.

I found this species plentiful in flocks of ten or a dozen in the bush along the road between El Obeid and Bara in April.

They were feeding on the ground, and at first, at a distance, I almost thought that they were some kind of Starling.

49. Ploceipasser superciliosus (Rüpp.).

a. ♀. Jebel Melbis, April 18, 1904.

My single specimen was shot from the top of a large baobab tree between El Obeid and Jebel Melbis. Large numbers of Bush-Sparrows were also frequenting these trees, and I probably overlooked other individuals of this species among them.

50. Sitagra luteola (Licht.).

a. ♂. Bara, April 26, 1904. } Breeding-plumage.
b. ♂. " " " }
c. ♀. Jebel Abu Sinun, April 9, 1904.
d. ♂. Roseires, May 1904.

This is the commonest Weaver-bird in the red-sand country of Kordofan. At Bara it was frequenting the lime- and fig-gardens in immense flocks at the end of April. At that date only a very small percentage of the males had assumed the breeding-plumage. I noticed it daily on the road between Hashaba and El Obeid.

51. Hyphantornis galbula Rüpp.

a. ♂. Gedaref, April 22, 1901.
b. ♀. R. Dinder, April 4, 1903.

This Weaver-bird was in immense flights—tens, if not hundreds, of thousands—between Gallabat and Gedaref in April and May 1901. Though only a few shewed any traces of the breeding-plumage at that date, they were already beginning to build nests in the lime-trees at Gedaref. The numbers of this species in the Eastern Soudan, and of *Hyphantornis tæniopterus* on the White Nile, must be seen to be believed. They can only be compared to locusts in multitude, and their vast flights wheel and rise in the air with a sound like the roar of a hurricane, resembling at a distance great columns of smoke. The damage these birds do to cultivation must be immense; and for this reason I have heard of natives burning their breeding-colonies wholesale. I once passed a disused breeding-place near the

Blue Nile in which the bushes for a hundred yards on both sides of a path, and for a distance of nearly half a mile, were literally covered with their nests. There must at the lowest computation have been many hundreds of thousands of them.

52. Hyphantornis tæniopterus Reichenb.

a. ♂. Fashoda, August 1902.
b. ♂. " " "

What I have written about the numbers of the last species applies equally well to the extraordinary abundance of this on the White Nile. I see that Mr. Hawker wrote that he "must have seen many millions," and I can guarantee that there is no exaggeration.

My specimens, in full breeding-plumage, were kindly collected for me by Dr. Sukri Effendi Dib, of the Egyptian Army. He told me that they were breeding in great numbers during August in long grass at Fashoda.

53. Oriolus galbula Linn.

a. ♀. Khartoum, Sept. 27, 1902.

A very considerable immigration of Golden Orioles occurs at Khartoum at the beginning of September, when the lime- and fig-trees are full of them, mostly immature birds. After this they pass on, and are comparatively scarce until March and April, up to the end of which month they are abundant again. I have never heard them utter their beautiful flute-like notes in their winter-quarters.

From Halfa in the north their migration follows the Nile Valley up to Uganda. Gedaref is the most easterly point at which I have observed it.

54. Buphaga erythrorhyncha (Stanl.).

When creeping up to buffaloes in thick bush, at Jebel Ahmed Aga on the White Nile, I have often heard the sharp alarm-note of this species, and occasionally seen it. Except in this one locality, I do not remember having met with it.

55. Lamprotornis porphyropterus Rüpp.

a. ♂. Fachi Shoya, White Nile, Nov. 14, 1902.
b. ♀. River Rahad, April 6, 1901.
c. ♂. Roseires, May 11, 1904.
d. ♂. ,, June 18, 1904.

Purple-winged Glossy Starlings are common on the Upper Blue Nile and its tributaries, on the Abyssinian frontier, on the well-wooded parts of the White Nile and Bahr-el-Ghazal, and in Kordofan.

I must confess to being rather puzzled as to the short-tailed and long-tailed forms (*L. porphyropterus* and *L. æneocephalus*) into which this species has been divided. Mr. Ogilvie-Grant ('Ibis,' 1902, p. 402) seems to distinguish them principally by the tails, giving measurements, among which 6·1 inches is the maximum for *L. porphyropterus*, and 8·35 inches for *L. æneocephalus.*

My difficulty is that these measurements do not seem to me representative, and I am sure that the collection of a long series would furnish larger measurements for both forms—in the case of *L. æneocephalus* very much so.

One of my Roseires skins (a male) has the central rectrices 7·8 inches long, *i.e.* well within the dimensions given for *L. æneocephalus*. But near El Obeid, in Kordofan, I saw some birds with tails so very much longer—undoubtedly the true *L. æneocephalus*—that I hesitate to ascribe my Blue or White Nile birds to the same form, and should call them *L. porphyropterus.*

Unfortunately I have no skins of these very long-tailed Kordofan birds. I was travelling hard at the time, and only shot one with a length of tail which particularly attracted my attention. This was an adult male, in moult, with the head covered with quills, and I did not skin it. One of the central rectrices had been shed; the other I pulled out and measured, but subsequently lost. Its length was exactly 11 inches; thus it exceeded the maximum length given by Mr. Ogilvie-Grant for *L. æneocephalus* by more than that, in turn, exceeds his measurements for *L. porphyropterus*!

56. Lamprocolius chalybeus (Ehr.).

a & *b*. ♂ ♀. Between Doka and the Atbara, April 26, 1903.

c & *d*. ♂ ♂. Jebel Melbis, Kordofan, April 14, 1904.

This handsome rifle-green Glossy Starling is more or less abundant south of the 14th degree of N. lat., wherever the country is fairly well wooded. I have seen it as far east as the Setit, and as far west as Mazrub in Kordofan.

These birds are gregarious throughout the year, breeding in colonies. On the Setit, in April, they were repairing their old nests, which were bulky structures of sticks, placed in the tops of "heglik" trees. Several nests were often built together into one great mass.

57. Spreo pulcher (P. L. S. Müll.).

a. ♀. Sebil, Blue Nile, March 30, 1903.

b. ♂. West of Omdurman, Jan. 2, 1902.

The Chestnut-bellied Glossy Starling is a common bird between about the 12th and 18th degrees of N. lat. It is first met with along the Desert-railway from the Atbara to Khartoum; eastwards it occurs on the Blue Nile and its tributaries, the Atbara, and the Setit; westwards I have seen it as far as Mazrub in Kordofan. I am not sure how far up it follows the White Nile, but I do not remember seeing it at Fashoda or further south.

I have not found eggs or young, but the old nests, built of sticks and placed in low thorn-trees, are very conspicuous objects in the desert-scrub. Being well protected by the thorns among which they are built, they last in the dry climate for many years, and the abundance of these old nests gives one at first a very exaggerated idea of the quantities of Starlings necessary to build them.

These birds are generally met with in rather small flocks; I never saw them in such large assemblies as *Lamprocolius chalybeus*. They feed principally on the ground; their note is a harsh "kree"; the whitish colour on the primaries is conspicuous in flight.

58. Corvus scapulatus (Daud.).

The handsome White-bellied Crow is the commonest bird of its family in the country. Roughly speaking, it occurs throughout the Soudan from Abu Hamed on the Nile to Meshra-el-Rek in the Bahr-el-Ghazal, and from the Kassala district across to Western Kordofan. It generally keeps much more within reach of water than the Brown-necked Raven. It seems to be migratory to the extent of moving in the rains from the black cotton-soil districts, such as Gedaref, to the sandy or gravelly tracts. This is apparently because the tenacious cotton-soil mud balls on its feet in wet weather. It keeps closely to a favourite haunt: for example, there are always a few pairs at Halfaia (opposite Khartoum), though in Khartoum itself I have never seen a specimen during four years' residence. At Kamlin on the Blue Nile many hundreds come to roost in a grove of date-palms.

I have not taken the eggs, but have seen the nests with sitting birds from February to May.

59. Corvus umbrinus Sundev.

a. ♂. Khartoum, Nov. 6, 1902.

The Brown-necked Raven is common on the sandy and gravelly deserts of the Northern and Western Soudan, but is scarce in the cotton-soil country.

Along the Desert-railway from Halfa to Khartoum it is always to be seen; it is abundant behind Khartoum, attracted by garbage from the town; and it is constantly met with on the deserts and Jebels of Kordofan.

I did not see it once on the Dinder, Rahad, Atbara, or Setit Rivers (March to May 1904).

60. Corvus capensis Licht.

I have only noticed the African Rook between Kaka and Fashoda, the district in which Mr. Hawker met with it.

61. Dicrurus afer (Licht.).

This Drongo is a fairly common bird on the Upper Blue Nile and its tributaries, on the Atbara and Setit, and on the more thickly wooded parts of the White Nile. Its habits resemble those of the allied species.

62. Prionops poliocephalus (Stanl.).

a. ♂. Gallabat, April 15, 1903.

This Helmeted Shrike is usually met with in parties of five or six, which follow each other closely through the bush. It does not seem common. I have met with it on the White Nile near Jebel Ahmed Aga, and near Gallabat in the Kassala Province.

63. Fiscus excubitorius (Des Murs).

a. ♀. Bahr-el-Ghazal, March 6, 1902.

I first met with the Long-tailed Grey Shrike at Kaka in February 1902. There it was comparatively scarce, but in March I found it very abundant in the "ambatch" cover along the Bahr-el-Ghazal and Jur Rivers. I have seen it nowhere else.

I do not think that this Shrike can be correctly retained in the genus *Lanius*. Its habits are so very different. It is highly gregarious, being almost always found in parties; and these are not pairs of old birds accompanied by their last brood, but companies of as many as twelve or fifteen individuals. I have seen them dancing about all over a tree, jerking their tails and flirting their wings, more like Babblers than true Shrikes of the typical genus.

64. Lanius leuconotus Brehm.

a. ♂. Khartoum, Feb. 6, 1901.

This conspicuous Shrike is fairly common and of wide distribution. I find from my notes that I met with it almost daily between Sept. 7th and May 11th, from the Setit across to Western Kordofan, and up the White Nile as far as the Sobat Junction. During the remaining months of the year I have generally been away, but, as it was not to be seen at Khartoum just before the first week in September, and then became suddenly abundant, I had formed the idea that it was a migrant, and did not breed in the country. However, on March 31st, 1904, at the Mazrub Wells in Western Kordofan, I came on two bob-tailed young birds sitting on a thorn "zariba," and watched the parents feeding them for some time.

This Shrike is quite at home in any desert where there are thorn-bushes for it to settle on, and along stretches of fifty and seventy miles without water I have noticed it the whole way.

65. Lanius nubicus Licht.

a. ♂. Fedassi, Blue Nile, April 2, 1901.
b. ♂ jr. Khartoum, Oct. 20, 1902.
c. ♂. Jebel Ain, White Nile, Nov. 15, 1902.

The Nubian Shrike is fairly common. It appears to be partly resident and partly migratory. It is comparatively seldom seen in the hot weather, the majority travelling down the Nile to Egypt in February and March. I have not found a nest, but it breeds here in the winter. My Khartoum specimen, shot on Oct. 20th, is very young, and Messrs. Rothschild and Wollaston noticed young birds at Shendi in February and March. With habits very like those of the Woodchat, it is a great frequenter of gardens and groves of shady trees, and is much more often found in these than in the open bush.

At a recent garden-party at the Palace, Khartoum, one of these little Shrikes created considerable amusement. Round the marquee where refreshments and materials for smoking were provided, a good many bright pink matches were littered about on the turf, and these the birds evidently took for worms, fluttering down and hovering over one after the other, perfectly regardless of the crowd.

66. Lanius collurio Linn.

The Red-backed Shrike is common in winter, arriving at Khartoum at the beginning of September. Immature birds far outnumber the adults.

67. Lanius paradoxus Brehm.

a. ♀. Kamlin, Blue Nile, March 3, 1901.

Scarce. A few examples of Brehm's Woodchat-Shrike may generally be noticed in the gardens and cultivated spots at Khartoum at the end of August or beginning of September, while between this and March I have occasionally seen it on the White and Blue Niles.

Lanius isabellinus Hempr. & Ehr. I do not think I have come across.

68. Nilaus afer (Lath.).

a. ♀. 20 miles west of Omdurman, Jan. 1, 1903.
b. ♂. ,, ,, ,, Jan. 2, 1903.
c. ♂. Jebel Melbis, Kordofan, April 16, 1904.

Nowhere abundant, but I have come across it singly or in pairs along the White Nile generally, and as far west as El Obeid in Kordofan.

This Bush-Shrike is a bird of unobtrusive habits, and spends most of its time quietly searching branches and foliage for its insect-food. In its actions it reminds me very much of the genus *Tephrodornis*. Its note is a clear and somewhat ventriloquistic whistle.

69. Laniarius æthiopicus (Gm.).

a. ♀. Gallabat, May 7, 1901.

I have only met with the Abyssinian Pied Bush-Shrike in the khor which runs from Gallabat to the Atbara, where in May 1901, and again in May 1903, I found it fairly common.

70. Laniarius erythrogaster (Rüpp.).

a. ♀. Gallabat, May 6, 1901.

This very handsome scarlet-and-black Bush-Shrike is widely distributed in the Soudan. It is a common bird on the Blue Nile, Rahad, Dinder, Setit, and Atbara Rivers; on the White Nile and Bahr-el-Ghazal; and also in Western Kordofan. It has a fine clear whistle, something like an Oriole's, generally uttered from a dense thorn-bush.

71. Malaconotus poliocephalus (Licht.).

a. ♂. Gallabat, May 7, 1901.

The only specimen which I have come across.

72. Telephonus remigialis Finsch & Hartl.

a. ♂. Wad Medani, Blue Nile, April 3, 1901.

The Red-winged Bush-Shrike seems common throughout the country, excepting in the swamps of the Upper Nile. It is met with far from water in the thorn-scrub on the western sand-regions. Its note is a long-drawn piping whistle; the birds are nearly always in pairs, and they have a pretty trick of fluttering straight up into the air from a bush and then parachuting down into it again.

73. ARGYA ACACIÆ (Licht.).

Lichtenstein's Desert-Babbler is common wherever there are scrubby thorn-bushes on sandy desert from Halfa southwards to the White Nile, and from Wad Medani on the Blue Nile across to Western Kordofan. Except when nesting, it is always in small parties of six to eight, with the regular habits of the Babblers of the "Seven Sisters" group.

74. CRATEROPUS LEUCOCEPHALUS (Rüpp.).

a. ♀. Gallabat, May 7, 1901.

I have met with the White-headed Babbling-Thrush on the Setit and Upper Atbara, on the Upper Blue Nile and its tributaries, and on the White Nile to a little further up than Duem. It is generally in parties of a dozen or so, and is a common species. I have often wished that it was less abundant, for no sooner do a party detect an intruder than they take upon themselves to warn every living thing in the neighbourhood of his presence, following him about persistently with a noise like a policeman's rattle!

75. CRATEROPUS CORDOFANICUS, sp. n. (Plate VII.)

a. ♂. Jebel Melbis, Kordofan, April 16, 1904.

After carefully comparing this specimen with all the skins of the genus *Crateropus* in the British Museum, I venture to describe it as a new species—a view in which Dr. Sharpe concurs. Its nearest ally is *C. plebeius* (Rüpp.), from which it may readily be distinguished by its smaller size and paler coloration, by having the feathers of the throat and breast tipped with white, and by the flanks and under tail-coverts being buff-coloured. Measurements of the type specimen (♀):—Length 222 mm.; wing 108; tail 106; tarsus 28; culmen 17. Bill black; legs and feet dusky brown.

I found this bird quite common along the "khor" which runs from Jebel Melbis towards El Obeid. Its habits are the same as those of *Crateropus leucocephalus*, the place of which it takes in this locality. I shot two specimens, but only preserved one of them, not attaching any importance to the bird at the time, since it seemed so common.

I did not meet with it anywhere else.

76. Pycnonotus arsinoë (Hempr. & Ehr.).

a. ♂. Khartoum, Feb. 1903.

This Bulbul is a tame and cheery bird, frequently entering houses and evincing little fear of man. It is common and generally distributed in all the provinces.

At Khartoum it breeds in gardens, principally in the months of March and April.

77. Eremomela griseoflava Heugl.

a. ♀. Bara, Kordofan, April 27, 1904.
b. ♀. ,, ,, ,, ,,
c. ♀. Um Bosha, Kordofan, May 25, 1904.

I found the Grey-and-Yellow Warbler common in the bush in the red-sand country of Kordofan, noting it everywhere from Hashaba to El Obeid, and north to Bara. It associated in pairs or small parties of seven or eight, and strongly reminded me of a *Sylviella* in appearance, though it is less of a Creeper in habits. It is particularly partial to the bushes of the "Sodom Apple" (*Calotropis procera*).

78. Camaroptera brevicaudata Rüpp.

a. ♂? Tewfikia, White Nile, April 1902.
b. ♀. Jebel Melbis, Kordofan, April 16, 1904.

The Green-backed Bush-Warbler, though nowhere very plentiful, is widely distributed. I have seen it at Gallabat and on the Setit, on the White Nile, and in Kordofan. It is generally noticed creeping about zaribas and thorn-thickets.

79. Sylviella brachyura Lafr.

a. ♂? Near Gallabat, May 1901.
b. ♀. Tewfikia, Feb. 28, 1902.

The Cinnamon-throated Bush-Warbler is a fairly common and widely distributed little bird. I have met with it almost everywhere from the Setit to the Bahr-el-Ghazal. Its round wings, short tail, manner of flight and of creeping about trees, all forcibly reminded me of a Nuthatch. "Nuthatch-Warbler" would be a good English equivalent for the name of the genus.

80. Phyllolais pulchella (Rüpp.).

a. ♂. Tewfikia, March 1902.

The Beautiful Bush-Warbler was common in the neighbourhood of Fashoda and Tewfikia at the time that I shot my specimen.

81. Prinia murina (Heugl.).

a. ♂. Tewfikia, White Nile, March 1902.

The Tawny-flanked Grass-Warbler seemed extremely common at Kaka and Tewfikia when I was there in February and March 1902.

82. Prinia mystacea (Rüpp.).

a. ♂? Gedaref, June 1901.

This was the common Grass-Warbler at Gedaref when I was there in April and May 1901.

83. Burnesia gracilis (Rüpp.).

The Graceful Grass-Warbler is abundant in scrub and cultivated ground near Khartoum and north of it in the winter and spring, breeding in February and March.

84. Spiloptila clamans (Temm.).

a. ♂. Mesjid, Blue Nile, March 3, 1901.

b. ♀. Khartoum, Nov. 8, 1902.

These exceedingly pretty little Warblers are plentiful in scrub near Khartoum and along the Nile north of it, on the White and Blue Niles, where the country inland is sandy desert, and in Kordofan between Duem and El Obeid. They are usually met with in little parties of five or six, and are most restless and active birds, always in motion, and perpetually jerking their long tails up and down or from side to side.

85. Cisticola cisticola (Temm.).

a. ♂. Kawa, Nov. 13, 1902.

Common and widely distributed, apparently breeding from

November to March. It is most abundant in the winter and early spring months. In 1902 large numbers appeared in the cultivated spots round Khartoum on October 10th. A few days earlier I might have searched in vain for a single specimen.

Cisticola aridula Witherby (Ibis, 1901, p. 256) I have so far failed to obtain.

86. Cisticola marginalis (Heugl.).

a. ♂. Fashoda, Feb. 6, 1902.

Common in high grass along the river and khors at Fashoda. It is a shy little bird, disappearing into the grass the instant it settles, after the manner of a *Locustella.*

The species is distinguishable from its near ally, *C. erythrogenys* Heugl., by having the upper tail-coverts unspotted buff.

87. Cisticola ruficeps (Rüpp.).

a. ♂. Gedaref, June 1901.
b. ♂. " " "
c. ♂. Tewfikia, April 1902.
d. ♀. Jebel Melbis, April 14, 1904.

The Red-capped Fantail-Warbler seems to be widely distributed. I have met with it on the Blue Nile and its tributaries, on the Atbara and the Setit, round Gallabat and Gedaref, on the White Nile, and near El Obeid in Kordofan. My specimen from the last locality (now in the British Museum) is considerably paler than others from the dark cotton-soil districts, or than any of the series in the British Museum. This may perhaps be due to bleaching or abrasion; but though the difference in colour is slight, I am inclined to think that other specimens from the western sandy regions will be found to shew it too. In habits this is rather a pleasing little bird; it often comes close to a tent to investigate it, hopping actively about on the ground, and when followed flitting from bush to bush instead of taking refuge in the grass.

88. Cercotrichas podobe (P. L. S. Müll.).

a. ♂. Jebel Ain, Nov. 15, 1902.

The Black Bush-Robin is a common bird of the acacia-scrub. It is a pleasing and active little bird, looking something like a Blackbird in miniature as it hops about on the ground with its tail raised, and is a cheery and persistent songster. In flight the brown on the primaries and the white spots on the expanded tail are conspicuous. It is almost always found in pairs. It ranges at least as far north as the Atbara, all up the Blue Nile and across to the Setit, and westwards right through Kordofan. I do not know whether it reaches further south than Kaka or Fashoda on the White Nile.

I took two clutches, of two and three eggs, on the Setit on May 6th and 12th, 1903. The nests were like Robin's, and placed in crevices in tree-trunks.

89. ACROCEPHALUS TURDOIDES (Meyer).

The Great Reed-Warbler seems to pass through the country southwards in September. In that month I have seen it on three or four occasions in reed-beds on the White Nile and in "dhurra" crops at Khartoum. I should call it a rare bird in the Soudan.

90. ACROCEPHALUS STREPERUS (Vieill.).

a. ♂? Kamlin, Blue Nile, March 1901.

The Common Reed-Warbler is a fairly abundant species in the winter and spring. I have shot it as far east as Gallabat and as far west as El Obeid in Kordofan.

91. ACROCEPHALUS PHRAGMITIS (Bechst.).

The Sedge-Warbler is occasionally, but rarely, met with in the winter. On two occasions I have been able to watch the bird through glasses in gardens at Khartoum, and I am pretty sure of the identification, though I have not shot specimens.

92. HYPOLAIS PALLIDA (Hempr. & Ehr.).

a. ♂. Khartoum, Nov. 11, 1902.
b. ♂. ,, Feb. 10, 1902.
c. ♀. Gedaref, May 1, 1901.

Quite the most abundant of the migratory Warblers in winter and spring.

93. Phylloscopus rufus (Bechst.).

a. ♀. Khartoum, Nov. 8, 1902.
b. ♀. ,, Nov. 10, 1902.
c. ♀. Kawa, White Nile, Nov. 13, 1902.

The Chiffchaff is abundant in gardens at Khartoum in the winter. Both Mr. Hawker and Mr. Witherby seem to think it scarce. I can only account for this by the fact that it keeps principally to gardens, while these gentlemen were collecting mostly in the bush. Being one of the earliest birds to return north, it had probably become very scarce during the latter months in which they were collecting.

Both the large and small races of this bird winter here, the latter being much the most plentiful. My specimen *c* belongs to the large form.

94. Sylvia atricapilla (Linn.).

a. ♂. Khartoum, Oct. 15, 1902.

The Blackcap is occasionally met with in gardens at Khartoum in the winter. My specimen was taken from the claws of a Lanner Falcon.

95. Sylvia orphea Temm.

The Orphean Warbler is common during winter in scrub along the Nile north of Khartoum. When seen closely enough it can be distinguished from the last species by the white on the outer tail-feathers; but I have often seen black-headed Warblers without being able to ascertain to which species they belonged.

96. Sylvia hortensis Bechst.

Garden-Warblers were not uncommon at Khartoum in September and October 1902. I shot one with an air-gun on October 20th of that year, but it was too much damaged to preserve. In the other years which I have spent here it has seemed much rarer.

97. Sylvia rueppelli Temm.

a. ♀. 20 miles west of Omdurman, Jan. 1, 1903.

Rüppell's Warbler is scarce. I have met with it on the

Nile at the Shabluka Cataract and in scrub in the desert west of Omdurman twenty miles from water.

98. Sylvia curruca (Linn.).

The Lesser Whitethroat is, next to *Hypolais pallida*, the commonest of our migratory Warblers. It remains with us until the end of May.

99. Aëdon galactodes (Temm.).

a. ♀. Gedaref, April 26, 1901.
b. ♂. R. Rahad, May 22, 1903.

The Rufous Warbler is a fairly common and generally distributed bird in the winter and spring. I have seen it as far east as the Setit and in Western Kordofan. Its numbers are conspicuously increased at the time of the northward migration in March. Whether any remain to breed in the Soudan I do not know, but I have seen it as late as the beginning of June.

100. Cossypha heuglini Hartl.

a. ♂? Bahr-el-Ghazal, March 1, 1902.

I have only met with this bird in the thorn-forests of the Bahr-el-Ghazal, where I saw it fairly often.

101. Pratincola rubetra (Linn.).

The Whinchat is a rare winter visitor. I noted it at Khartoum on September 7, 1901, and on several following days. I shot an example on February 2, 1903, but I accidentally trod on the bird while searching for it in a tall bean-crop, and thus spoilt it for skinning.

102. Pratincola rubicola (Linn.).

a. ♂. Khartoum, Feb. 10, 1902.
b. ♂. „ Dec. 28, 1902.

The Stonechat is a scarce winter visitor. I have only met with it in the bean-fields and other cultivated places round Khartoum, and by no means frequently.

103. Ruticilla phœnicurus (Linn.).

a. ♂. Khartoum, Nov. 20, 1902.

The Redstart is common between September and March, and I have seen it in its winter plumage from Gedaref to Kordofan, and south to the Bahr-el-Ghazal. In its habits it is a more shy and less conspicuous bird here than when in its northern breeding-grounds.

104. Lusciola golzi (Cab.).

a. ♂. Khartoum, Sept. 1901.

Persian Nightingales arrive at Khartoum in considerable numbers in September, but, after resting for a week or two in the lime-gardens, continue their journey south, and do not reappear until they pass through again in the spring. At the time of their actual arrival I have usually been absent on leave, but on my return to Khartoum on Sept. 17th, 1901, Sept. 12th, 1902, and Sept. 5th, 1904, they were to be found in every garden in the town. They are exceedingly tame birds, keeping principally to the ground, and hopping away under cover rather than flying when approached. They have a harsh "churring" alarm-note. Judging from the number of their feathers seen lying about, they fall very frequent victims to cats.

105. Cyanecula suecica (Linn.).

a. ♀. Kaka, Feb. 24, 1902.

In February 1902 I noticed a considerable number of Blue-throated Warblers frequenting the high grass in a swampy khor at Kaka on the White Nile. I also noted the bird at Khartoum on the 14th of September, 1901. It is in the irrigated land of Egypt that the main body of these migrants pass the winter, and in the Soudan they are, comparatively speaking, only stragglers.

106. Turdus torquatus Linn.

a. ♂. Khartoum, Dec. 4, 1902.

This example was shot on the green grass at the edge of the subsiding Nile. This is the only occasion that I have seen the Ring-Ousel in the Soudan, and Captain Shelley tells me that my specimen is the only one which has ever been obtained within the Ethiopian Region, *i. e.*, south of the Tropic of Cancer.

107. Turdus pelios Bp.

a. ♂? Gallabat, May 6, 1901.

b. ♂. „ April 20, 1903.

I found the Ethiopian Thrush fairly common at Gallabat on the Abyssinian frontier in May 1901, and on the Upper

Blue Nile, the Atbara above the Setit Junction, and the Setit River in March, April, and May 1903. It is a quiet unobtrusive bird, generally found searching for food among fallen leaves in shady khors and thickets. Except in these eastern parts of the Soudan, I have never met with it.

108. Monticola cyanus (Linn.).

a. ♀. Khartoum, Oct. 7, 1902.
b. ♀. ,, Feb. 18, 1903.

The Blue Rock-Thrush is a fairly common winter visitor to the northern part of the Soudan. From the end of September to March a few may always be found in Khartoum frequenting buildings, brickfields, old mud-ruins, &c. It also haunts the rocky hills in the deserts. Nearly all the examples which I have seen have been immature.

109. Monticola saxatilis (Linn.).

a. ♂. Khartoum, Oct. 7, 1902.

My remarks on *M. cyanus* apply equally to this species.

110. Saxicola œnanthe (Linn.).

a. ♀. Gedaref, April 27, 1901.
b. ♂. Fachi Shoya, White Nile, Nov. 14, 1902.

The Common Wheatear is generally distributed throughout the Soudan in the cold season. It seems equally at home in the bush, in the desert, or in the streets of Khartoum.

111. Saxicola melanoleuca (Güld.).

a. ♂. Khartoum, March 18, 1901.
b. ♀? Fachi Shoya, Nov. 14, 1902.
c. ♂. Khartoum, Feb. 21, 1903.

The Eastern Black-throated Wheatear is comparatively scarce, but I see several every winter. February, March, and April seem to be the months in which it is most often met with. At this season there are generally a few frequenting the mud-ruins at the back of Khartoum. My specimen from Fachi Shoya is in full male plumage, but appeared on dissection to be a female.

112. Saxicola pleschanka (Lepech.).

a. ♂. Khartoum, Oct. 24, 1902.
b. ♀. Kawa, White Nile, Nov. 16, 1902.

This Wheatear seems to be most often seen during the months of October and November, February and March. At these seasons a few are always to be seen about the streets and gardens of Khartoum. In March 1903 I found it more abundant on the Blue Nile than I have seen it anywhere since.

113. Saxicola aurita Temm.

a. ♂. Khartoum, Feb. 21, 1903.

Another rather uncommon Wheatear, most in evidence in the spring months.

114. Saxicola isabellina Cretzschm.

a. ♂. Assouan, Feb. 26, 1901.
b. ♂. Khartoum, Feb. 7, 1902.

The Isabelline Wheatear is not uncommon on the sandy desert near Khartoum and north of it, and on the Blue Nile. On the White Nile I have not seen it further south than Duem.

115. Saxicola deserti Temm.

a. ♂. Assouan, Feb. 27, 1901.
b. ♂. Khartoum, Feb. 5, 1902.
c. ♂. ,, Nov. 26, 1902.
d. ♂. ,, Dec. 28, 1902.
e. ♀. ,, Feb. 1903.
f. ♂. ,, Oct. 1904.

(Specimens *a* and *d* have buff edgings on the black throat-feathers. The others are in full plumage.)

The Desert-Wheatear is quite the commonest and most widely distributed bird of this family in the Soudan, and is found wherever the country is fairly open. It is a familiar bird in the streets of Khartoum.

Females seem curiously scarce compared with males.

116. Saxicola heuglini Finsch & Hartl.

a. ♂. Gedaref, May 27, 1901.
b. ♀. ,, May 30, 1901.

Heuglin's Wheatear is a bird of the dark cotton-soil country. I have met with it on the Upper Blue Nile, at Gedaref and Gallabat, and on the White Nile near Fashoda. It is generally very much tamer than the other Wheatears.

The striking black-and-white *Saxicola leucopygia* Brehm, which is so noticeable along the rocky banks of the Nile between Assouan and Wadi Halfa, does not appear to extend south of that station.

117. Melænornis edolioides (Swainson).

a. ♀. Gallabat, May 8, 1901.

I met with this species singly or in pairs in the khor at Gallabat. Its habits seemed to be something like those of the small Drongos and the more sluggish Flycatchers.

My specimen was identified by Dr. Hartert. I notice that Shelley (Birds of Afr. i. p. 93) gives W. Africa for *M. edolioides*, and N.-E. Africa for *M. pammelæna* (Stanl.).

118. Bradyornis pallidus (v. Müll.).

a. ♀? Tewfikia, White Nile, April 1902.

I saw this bird, which very closely resembles a Garden-Warbler, a few times on the White Nile in the spring of 1902. One of them kept returning to the same perch, much after the manner of a Flycatcher.

119. Muscicapa grisola Linn.

The Spotted Flycatcher arrives at Khartoum in large numbers in the autumn, but after a week or two entirely disappears, passing on further south. Its return passage in the spring is, for some reason, much less noticeable. I have not been able to note the date of the autumn arrival exactly, but the bird was abundant when I returned from leave on Sept. 13th, 1901, and by Sept. 17th, 1902. In both of these years it suddenly vanished again during the second week in October.

120. Muscicapa atricapilla Linn.

a. ♀. Tewfikia, White Nile, April 1902.

The Pied Flycatcher, like the Spotted, passes through Khartoum in the autumn, and again in the spring, but is rare compared with the latter species. The great majority are young birds; in fact, I have only seen five or six old males in black-and-white plumage altogether.

121. BATIS ORIENTALIS Heugl.

a. ♀. Bahr-el-Ghazal, March 1904.
b. ♂. Jebel Melbis, April 16, 1904.
c. ♀. " " " "
d. ♂. Roseires, May 28, 1904.
e. ♀. " " "

Widely distributed in the Soudan where there is thorn-jungle. I have noticed it on the Blue Nile and its tributaries, on the Atbara and Setit, on the White Nile and Bahr-el-Ghazal, and in Kordofan near El Obeid.

In habits this Flycatcher much resembles the little Pied Shrikes of the genus *Hemipus*. It is almost always in pairs, and appears to be of a very affectionate disposition. If one is shot the survivor flutters down to it in most pitiful distress.

According to my dissections, it is certainly the males which have black and the females maroon pectoral belts.

122. TERPSIPHONE CRISTATA (Gm.).

a. ♂. Roseires, May 26, 1904.

I have only met with the Paradise Flycatcher, in the chestnut plumage, at Gallabat (May 1901 and May 1903) and on the Bahr-el-Ghazal (March 1902).

My specimen, a beautiful white adult male, was obtained for me by Mr. G. B. Middleton.

123. HIRUNDO RUSTICA Linn.

An abundant cold-weather migrant, but I have never known it to breed in the Soudan. I have sometimes seen it skimming over sandy desert ten or more miles from water.

124. HIRUNDO ÆTHIOPICA Blanf.

a. ♀. Gedaref, April 1901.

This is our commonest resident Swallow. I have met with it everywhere I have travelled, from the Abyssinian frontier on the east to the Bahr-el-Ghazal and Kordofan. It is just as tame and domestic in its habits as *Hirundo rustica* in England, breeding fearlessly in occupied rooms and offices.

I suspect that Mr. Witherby's informant, who told him that the Common Swallow bred regularly in the Medical Officers' quarters at Omdurman, mistook this species for it. At out-stations, away from the rivers, these birds start nesting as soon as the first heavy showers of the rains enable them to obtain wet mud for the purpose. I find the following note in a diary of mine :—

"Gedaref, June 4th, 1901. Rain at last—torrents of it all night. The eight Swallows which inhabit my room took prompt advantage of the muddy pools which it had formed all round, and commenced nest-building as soon as they woke up. By eight o'clock there were four nests under way, where yesterday there was not one!"

125. Hirundo smithi Leach.

The beautiful Wire-tailed Swallow is, generally speaking, decidedly uncommon. It is a water-loving bird, and the absence of bridges and culverts, under which it usually nests, confines it principally to those portions of the rivers which are rocky. I have seen it at, and north of, Khartoum, but never south on the White Nile. On the rocky Setit and the upper portions of the Atbara, and on the Rahad and Dinder Rivers, it is tolerably numerous. In these localities I have found its nests placed against rocks, just above water-level, and seen old birds accompanied by their young in March and April.

126. Hirundo senegalensis Linn.

a. ○. Jebel Melbis, Kordofan, April 15, 1904.
b. ○. ,, ,, ,, April 18, 1904.

These Swallows were frequenting the tallest "Baobab" trees when I came across them. They were usually in pairs or small parties. They have a steady circling flight, and continually utter a single rather deep note.

I have also noticed Rufous-backed Swallows at Gallabat and on the Bahr-el-Ghazal, but I am not sure of the species; I am inclined to think that they were *Hirundo rufula*.

127. Hirundo urbica (Linn.).

The House-Martin seems quite a rare straggler to this part of Africa. I only noted it a few times in the autumn of 1901, when I saw three or four together at Khartoum on September 15th and October 26th and 27th, while Messrs. Hawker, Witherby, Rothschild, and Wollaston do not seem to have met with it at all.

128. Cotile riparia (Linn.).

Sand-Martins are more or less abundant on the rivers between September and March. Often a "rise" of tiny May-flies will cause them to assemble on the White Nile at Khartoum in great numbers; at other times one hardly sees any.

129. Cotile minor Cab.

The Lesser Sand-Martin seems fairly numerous, associating with the last species. When both are plentiful it is, of course, difficult to judge in what proportion the species are mingled. This bird breeds here, boring its nest-holes in the soft soil of the Nile banks. I have noticed it thus engaged in October and November. The colonies which I have seen have been very small, consisting of only three or four pairs of birds, and twice I have found a single pair breeding by themselves.

130. Cotile shelleyi Sharpe.

a. ♀. Khartoum, Dec. 26, 1902.
b. ♀? " " "

These little Martins were abundant at the time when I obtained my specimens. Hundreds of them were hawking over a crop of dhurra. Their small size attracted my attention, and I managed to kill four of them with a catapult—a very useful collecting-weapon, by the way, but one with which I am not so proficient as in my younger days! I had probably overlooked the species among other Sand-Martins on former occasions.

131. PTYONOPROGNE RUPESTRIS (Scop.).

I have only seen this Cliff-Swallow on a few occasions, frequenting the rocky hills of the Shabluka Cataract, and always singly.

Ptyonoprogne obsoleta, so common about the temples on the Nile north of Wadi Halfa, I have not seen within the limits of the Soudan.

132. CYPSELUS APUS (Linn.).

Flocks of the Common Swift may be met with anywhere in the Soudan during the winter months. I have noted them from September 7th to May 30th.

133. CYPSELUS AFFINIS Hardw.

a. ♂. Gedaref, May 25, 1901.

My specimen was shot from a number which were flying in company with *C. apus*. This is the only time that I have met with the bird in the Soudan.

134. TACHORNIS PARVUS (Licht.).

The Little Palm-Swift is abundant wherever the "Deleb" (*Borassus*) palms, in which it breeds, are found.

135. CAPRIMULGUS EUROPÆUS Linn.

a. ♂. Khartoum, Oct. 27, 1902.

The Common Nightjar is abundant about Khartoum in September and October, after which, as is the case with so many of the winter migrants, the great majority pass on further south, repassing in the spring.

136. CAPRIMULGUS EXIMIUS Temm.

a. ♂. Shendi, March 21, 1901.

I owe my first introduction to this beautiful Nightjar to Messrs. N. C. Rothschild and Wollaston, who pointed out to me the right sort of ground on which to look for it, and thus helped me to shoot my specimen near their camp at Shendi. In addition to obtaining a splendid series of skins, these gentlemen were successful in finding the eggs of this species, and their account of its habits leaves little to be added.

This Nightjar will probably prove to be widely distributed in the Soudan where the soil is of red or yellowish sand or gravel, with sufficient grass and scrub to afford some cover. Mr. Witherby obtained it at Wad Mariun on the White Nile, Messrs. Rothschild and Wollaston at Shendi, and I have met with it near Kamlin on the Blue Nile (April 1st, 1901); twenty miles west of Omdurman (Jan. 2nd, 1903); and at Jebel Shuwei, in Kordofan, a hill about thirty-six miles inland from El Duem on the White Nile (May 10th, 1904). It also occurs on the Atbara. On the red-sand tracts of Western Kordofan I frequently saw Nightjars in the evening, when it was too dark to identify them, and when I was carrying only a rifle; they may have been of this species.

137. CAPRIMULGUS ÆGYPTIUS Licht.

a. ♂. Khartoum, Dec. 10, 1902.
b. ♀. Bahr-el-Homar, March 1902.

I have met with the Egyptian Nightjar from Shendi, along the White Nile, to the junction of the Bahr-el-Homar with the Bahr-el-Ghazal; and on the Blue Nile between Khartoum and Medani.

At Khartoum in the winter months it may generally be found during the day resting among old brick-rubble and mud-ruins, six or seven birds often being in close company. By April these birds seem to leave the vicinity of the town to breed.

138. MACRODIPTERYX LONGIPENNIS (Shaw).

a. ♂. Gedaref, May 28, 1901.
b. ♀. ,, ,, ,,
c. ♂. Roseires, May 28, 1904.

The splendid Standard-winged Nightjar occurs right across the Soudan from the Upper Blue Nile and Upper Atbara to the White Nile and Bahr-el-Ghazal, but I have only met with it south of the 14th degree of N. latitude. Though, on the whole, an uncommon bird, it is in places fairly plentiful. Water is essential to it, and it is locally migratory to the extent of spreading in the rainy season to localities where pools are then found in khors which are dry in the hot months. At Gedaref, where the late Colonel Collinson, C.B., had told me that I should find it, I searched in vain until the last week in May, when the first showers left pools of standing water; then it suddenly arrived and became numerous. The birds used to appear every evening at sunset, drinking at, and hawking over, pools in the rocky khors. Passing close in the dusk they are strangely beautiful objects, the great webs behind fluttering about as they turn and twist in the air like two smaller birds following them.

This Nightjar has been figured by Mr. Gedge as resting on the ground with the "standard"-feathers vertically erect, the webs protectively imitating grass-heads or bulrushes—a mistake, in my opinion, perpetuated in Professor Newton's 'Dictionary of Birds,' p. 641. I do not believe that this is correct, or even possible. I have repeatedly, through glasses, watched the bird on the ground, both drinking at dusk and asleep during the day, and the long feathers were always straight out behind it, the bare shafts rising in a slight curve and the webs resting sideways on the ground. Mr. G. B. Middleton, in whose observations I have confidence, and whom I had particularly asked to observe the bird's resting-attitude, after two seasons at Roseires, where the bird is plentiful, confirms this. Lord Lovat ('Ibis,' 1900, p. 312) writes:—"When at rest the two elongate racquet-shaped quills were always extended beyond the tail, and the bird was never observed to erect them vertically above the back; indeed it seems *impossible that it should be able to do so.*" (The italics are mine.) I, too, consider that it is quite impossible. The long feathers are no more independently movable than any of the other primaries, indeed, being thicker at the base, their attachment to the bone is even more rigid. For about a quarter of an inch from their base these feathers are tubular, and take the upward turn which causes them to stand above the other primaries. The quill is then half truncated, one side only being thickened, flattened, and produced, the termination of the tubular portion remaining open. All movements of the long shaft and web are entirely due to its elasticity as it is carried through the air. In a freshly killed bird it is quite impossible to erect these feathers vertically from the base except by forcibly bending the shaft. The long feathers seem to be purely sexual adornments of the male, and to have no mimetic purpose at all.

Captain Boyd Alexander ('Ibis,' 1902, p. 358), writing of this species on the Gold Coast, says: "The males in courting bring forward their long wing-pinions until they droop towards the hen." I am convinced that this is done by the whole wing being turned upwards and forwards until the higher setting of the racquet-feathers and the weight of the webs cause them to droop forwards as described, without their having any independent movement. In a letter replying to this suggestion, Captain Alexander seems to incline to the same opinion.

I have written at some length on this point, as this strange and beautiful Nightjar has always had a fascinating interest for me, and it is becoming common to see cited as instances of protective mimicry fancied resemblances which are, at least, calculated to raise a smile among field-naturalists.

The "standard" feathers of this bird are a favourite hair-ornament of the Shilluk warriors of the White Nile, and very fantastic the feathers look, bending and nodding over the heads of these naked six-foot-spearmen.

Mr. Hawker obtained an egg on the White Nile in May; while an officer of the Egyptian army told me that he had seen eggs at Roseires in October and November.

The measurements of my finest specimen may be worth recording: Length (to end of central rectrices) 223 mm.; wing 180; bill at gape 26; tail 95; tarsus 18; total length of standard quill 550; length of web of ditto 175; greatest breadth of web 72.

139. Scotornis climacurus (Vieill.).

a. ♂. Kamlin, Blue Nile, March 31, 1901.

The beautiful little Long-tailed Nightjar seems to be the most abundant of the Caprimulgidæ in the Soudan. It is common as far north as Shendi, east to the Abyssinian frontier, and south to the Bahr-el-Ghazal. On the red-sand country of Western Kordofan I did not meet with it.

These Nightjars are particularly abundant just south of Jebel Ahmed Aga, on the White Nile, where at sunset I have watched them come streaming out of the bush across an open plain to the river in scores, if not hundreds. They generally keep to thick thorn-bush in the day, and are seldom met with on very open ground. Their habits are distinctly sociable, and I have often come on seven or eight resting in close company—frequently all male birds. Their note is a regular Nightjar's "churr."

There is something peculiarly moth-like about one of these birds as it rises silently at your feet in the shade, glides a few yards, shewing its richly marked wings, and drops again suddenly under a bush.

I took a pair of fresh eggs at Um Muttra Meila on June 8th, 1901, and another pair at Tewfikia on March 24th, 1902. At the latter place I found several hard-set eggs about the same time. On the White Nile these Nightjars were in full moult in November 1902, many being almost tailless.

With many opportunities for observation, I have never noticed that the "long tail-feathers are held apart at an angle of 25 or 30 degrees in flight," as described by Messrs. Rothschild and Wollaston. At any rate, I do not think that this is the case *as a rule*. Very few birds separate the *central* rectrices much in flight.

140. EURYSTOMUS AFER (Lath.).

a. ♀. Roseires, June 26, 1904.
b. ♀. „ June 11, 1904.
c. ♂. „ June 19, 1904.

My specimens of the African Broad-billed Roller were kindly collected for me by Mr. G. B. Middleton on the Upper Blue Nile. I have only once met with the bird myself, at Gallabat.

141. CORACIAS GARRULUS Linn.

a. ♂. Khartoum, Oct. 14, 1902.

The Common Roller arrives at Khartoum in considerable numbers during the first week of September, and is abundant along both Niles for the next two months, after which it is much less frequently seen. Its return migration in the spring is less noticeable.

142. CORACIAS ABYSSINICUS Bodd.

a. ♂. Gedaref, May 1901.
b. ♂. Fachi Shoya, White Nile, Nov. 14, 1902.

The Abyssinian Long-tailed Roller seems very generally distributed throughout the whole country. From south of about the 17th degree of N. lat. I think that I have seen it everywhere that I have been, from east to west, and it ranges into Uganda.

Though resident, it seems locally migratory. From the vicinity of Khartoum, where it is common during the rest of the year, it seems to disappear entirely in August and September (just at the period when *Coracias garrulus* becomes plentiful in its haunts), returning suddenly about the middle of October.

143. MELITTOPHAGUS PUSILLUS (P. L. S. Müll.).

a. ♂. Khartoum, Oct. 28, 1902.
b. ♀. „ Nov. 19, 1902.
c. ♀. „ Feb. 1903.

This little Bee-eater is abundant at Khartoum, and its tameness and brilliant plumage soon attract the attention of visitors. I have found it common along the Blue Nile up to Wad Medani, and have seen it at Gedaref; on the White Nile I do not remember its occurrence beyond Fashoda, while I have not met with it further north than Shendi.

144. MELITTOPHAGUS FRENATUS (Hartl.).

a. ♂. River Rahad, April 11, 1903.
b. ♂. „ „ „

These gorgeously coloured Bee-eaters are abundant on the Blue Nile above Wad Medani and all along the Rahad and Dinder Rivers. These last two rivers dry up into a chain of pools, often widely separated, during the hot months, and in the vicinity of the pools the Bee-eaters collect and breed in great numbers. In April 1903 many of the pools contained large fishes (probably *Hydrocyon*), which, being ravenous for want of food, were rising at these Bee-eaters every time that they skimmed over the surface of the water. It was a most curious, and, I should think, unusual sight. As a rule the birds were too quick for the fishes, and avoided them easily by shooting straight up into the air, but in half an hour's watching I saw two taken like flies within a few yards of me.

I came across many large breeding-colonies on the Rahad and the Dinder in the last week of March and the first fortnight of April, from which I obtained a good series of eggs.

145. MEROPS APIASTER Linn.

a & *b*. ♀ ♀. Gedaref, April 29, 1901.

The Common Bee-eater is an abundant cold-weather migrant, arriving in large flights at the end of August or beginning of September. A large proportion go further south, and after its first arrival the species becomes noticeably less plentiful until the return migration in spring, when very large gatherings are again met with. At Gedaref, in 1901, I noticed great numbers passing over on April 29th and the four following days, all travelling due west.

These Bee-eaters, like several other members of the genus, have a habit, on clear starlight nights, of leaving their roosts and rising high into the air, where they sail about uttering their clear chirruping notes. I have constantly noticed the same habit in *Merops sumatranus* in the Malay Peninsula. It occurs when the birds are well settled down in their winter-quarters, and has nothing to do with migration. It is well known that in England Swifts may sometimes be seen on a summer evening rising into the air until lost to sight, apparently spending some portion of the night on the wing, and it seems to me that these birds, with powers of wing which must surely make flight a delight to them, have acquired on their migrations a love of floating through the still night air over a sleeping world, which is not difficult to understand. I mention this, as the recreation, or *play*, of birds and animals (quite a different thing from actions connected with sexual *display*), which generally takes the form of rapid motion, receives but little attention.

146. Merops persicus Pall.

The Blue-cheeked Bee-eater is also an abundant visitor in winter and spring until the end of April.

In 1902, at the beginning of March, I met with it in great numbers at Lake No and along the Bahr-el-Ghazal, sitting on the "ambatch" and papyrus, and skimming down to capture insects from the surface of the water. Eastwards I have shot it at Gedaref and have seen specimens from Kassala. It is often common at Khartoum.

147. Merops albicollis Vieill.

a. ♂. Near Gedaref, June 9, 1901.
b. ♂. Wells at Fou, May 21, 1903.
c. ♂. Setit River, May 14, 1903.

The beautiful White-throated Bee-eater, so easily recognised by its pale sea-green colour, I have met with from the Setit to Jebel Ahmed Aga on the White Nile, but it is a comparatively scarce species, and I have never seen very many together. Its favourite haunts are rocky hills or "kopjes" covered with thorn-bush, and in such localities a few pairs are almost always to be found. I have once or twice seen it in Khartoum, but it is rare to meet with it far from the "jebels."

148. Merops viridis Linn.

a. ♂. Khartoum, Oct. 2, 1902.
b. ♂. ,, Feb. 1903.

The Green Bee-eater is very common all over the northern parts of the Soudan. It becomes rarer on the White Nile, but I have seen it at intervals as far along as the Bahr-el-Ghazal, and up that river to Meshra-el-Rek.

The only other Bee-eater with which this species associates is *Melittophagus pusillus*. I have sometimes seen them sitting touching each other, but more often the Green Bee-eater will drive away the other if it approaches too closely.

The brassy lustre which this bird shews when wheeling in the sunlight is very pretty.

149. Merops nubicus Gm.

a. ♂. Gallabat, May 6, 1901.
b. ♂. River Rahad, June 11, 1901.
c. ♂. Setit River, May 11, 1903.

These lovely Scarlet Bee-eaters are common on every river in the Soudan south of about the 15th degree of N. lat. They breed in large colonies in sandy or earthy river-banks in the months of May and June. I have seen cliff-faces riddled with their holes on the Setit, the Atbara, and the Blue Nile; but the flat banks of the White Nile do not afford any suitable breeding-places. These birds are always in attendance at bush-fires, snapping up the insects as they are driven before the advancing flame and smoke.

The delicate colouring of this species seems to lose much of its brightness after death. Certainly skins give a very poor idea of the beautiful rosy scarlet of its plumage.

150. Upupa epops Linn.

The Hoopoe may be met with at all times of the year, but only a small minority of the birds are resident, their numbers being suddenly swollen in February and March by migrants from the north. These visitors gradually pass on or scatter over the country, and the numbers decrease again until the noticeable return migration in September.

151. Irrisor erythrorhynchus (Lath.).

I have seen the Red-billed Wood-Hoopoes on the Upper Blue Nile, the Rahad, Dinder, and Setit Rivers; also on the Bahr-el-Ghazal and in Western Kordofan. They are almost always in parties of from three or four to seven or eight, and are decidedly shy birds, making off one after the other from tree to tree when followed, and usually keeping out of shot. Several times, when I have been following larger game, a flock of these beautiful birds has flown into a tree close to me, and I have been able to watch the squirrel-like ease with which they run up and down the boughs, now and again clinging, Creeper-like, to the rough bark, and with their slender coral-red bills probing the crevices for insects. They are fond of settling on the top of any large tree which rises high above the surrounding bush, such as the gigantic "Baobabs" in Kordofan, and parties generally follow the same line from one to another of these big trees day after day.

152. SCOPTELUS NOTATUS Salvin.

a. ♂. Duem, White Nile, Sept. 30, 1902.

The Straight-billed Wood-Hoopoe is to be found from the east to the west of the Soudan south of about the 15th degree of N. latitude. Though not rare, it is nowhere an abundant species. Unlike the *Irrisor*, it is almost always met with in pairs, and never in parties. It frequents lower bush and more open country than its larger relative, and searches for its food nearer the ground, to which it frequently descends.

153. BUCORVUS ABYSSINICUS (Bodd.).

I have occasionally met with the Abyssinian Ground-Hornbill on the Upper Blue Nile, the Rahad, the Dinder, and the Setit. Once in the rains I saw a party of four on the great open plain west of Gedaref. These birds were feeding on locusts, and it was most interesting to watch them walking round a bush and peering up at the branches until they detected one, when they would spring up to a height of three or four feet, expanding their white wings, and capture it with an unerring snap.

This bird becomes very tame in captivity, and evinces considerable attachment to its owner, whom it will follow about closely. Its movements can be wonderfully quick for so clumsy-looking a bird. I have seen one which looked half asleep make a sudden rush, and seize a mouse that it had caught sight of, in a manner that surprised me. The same bird when it missed a mouse would most patiently and intelligently watch the hole. Its patience usually outlasted mine, and I never saw it catch one in this manner, but no doubt it often did.

Mr. L. Gorringe tells me that he took a single egg of this bird from a hole in a baobab tree at Roseires on June 3rd, 1903.

154. Lophoceros nasutus (Linn.).

a. ○. Mesjid, Blue Nile, March 31, 1901.

This very plain-looking Hornbill is a common bird of the Soudan bush. It ranges further north than the next species —nearly to the mouth of the Atbara. On the White and Blue Niles both kinds occur together, but as the traveller advances further up those rivers the red-billed bird gradually replaces the other.

Mr. N. C. Rothschild notes it as doing considerable damage to the "dhurra" crops at Shendi. In the two specimens which I have examined the stomachs contained locusts only. I have also constantly seen it feeding on these insects, and I fancy that it does more good than harm.

155. Lophoceros erythrorhynchus (Temm.).

The Red-billed Hornbill is abundant on the Blue Nile above Wad Medani, and eastwards to the Abyssinian and Eritrean frontiers. On the White Nile I have seen it as far north as Jebel Ain, while south of this it becomes abundant, extending into the Bahr-el-Ghazal Province. In Western Kordofan it is common, frequenting the great baobab trees.

In the nestling the spots and stripe on the back are buff instead of white. A young bird just taken from the nest was brought to me on the White Nile on Nov. 11th, 1902.

156. Ceryle rudis (Linn.).

a. ♀. Khartoum, Nov. 21, 1902.

The Pied Kingfisher is abundant on all the Soudan rivers. In the "ambatch" along the Bahr-el-Ghazal and on the Jur River it is extremely numerous for a Kingfisher, and I have seen nearly a score together.

157. Ceryle maxima (Pall.).

a. ♂. Gallabat, April 20, 1903.

The Great Spotted Kingfisher is not uncommon on the Upper Atbara near the Abyssinian frontier, and on the Setit. I have also seen it on the Rahad, but not often.

158. Corythornis cyanostigma (Rüpp.).

a. ♀. Gallabat, May 7, 1901.

b. ♂. Roseires, Jan. 24, 1903.

I found the little Malachite-crested Kingfisher common on the khor which runs from Gallabat down to the Atbara, and in the papyrus-swamps of the Upper White Nile and the Bahr-el-Ghazal. On the lower and less swampy parts of the White Nile it is not common. Along the Blue Nile, which has steeper and less marshy banks, I have seen only *Ispidina picta*.

The little khor at Gallabat, several times mentioned in this paper, is a great resort of Kingfishers, as well as of many other birds; on it I have been able to watch *Ceryle maxima*, *Ceryle rudis*, *Halcyon semicærulea*, *Corythornis cyanostigma*, and *Ispidina picta* all fishing at the same pool—a sight which I have never seen elsewhere.

159. ISPIDINA PICTA (Bodd.).

a. ♀. Gallabat, May 7, 1901.
b. ♂. Setit River, May 10, 1903.
c. ♂. Roseires, May 26, 1904.

I have only seen this lovely little Kingfisher on the eastern side of the country, on the Blue Nile and its tributaries the Rahad and Dinder, on the Upper Atbara, and the Setit. It is largely an insect-eater, and is often met with in the bush some little distance from water.

Mr. L. Gorringe, of the Slavery Department, tells me that he obtained a clutch of four partly incubated eggs at Roseires on May 29th, 1903. The nest-hole was in the side of the entrance to an ant-bear's earth.

160. HALCYON SEMICÆRULEUS (Forskål).

a. ♀. Gallabat, May 6, 1901.
b. ♂. Setit River, May 7, 1903.
c. ♂. Roseires, May 26, 1904.

This handsome Kingfisher seems widely distributed. I have met with it from the Setit and Upper Atbara on the east right across to Western Kordofan, and as far south as the Bahr-el-Ghazal. It is locally migratory to the extent of spreading in the rains over tracts of country which are waterless during the dry weather, during which it is only met with in the neighbourhood of the rivers.

161. Halcyon chelicutensis (Stanl.).

a. ♂. Kaka, White Nile, Feb. 24, 1902.

I have only seen this Kingfisher a few times, in the neighbourhood of Kaka and Fashoda. On these occasions it was observed singly, perched on a tree or stump in a clearing on the look-out for insects.

162. Colius macrurus (Linn.).

a. ♂. 20 miles west of Omdurman, Jan. 2, 1903.

The Blue-naped Coly is common and evenly distributed along both the White and Blue Niles, but does not seem to range much further north than Khartoum. In the gardens of that town it is often seen, especially when the dates, to which it is very partial, are ripe, and it breeds in the lime-trees in the early spring. Except in the nesting-season, it is always met with in flocks of from ten to twenty individuals. These parties feed in the closest company, and the birds all take flight from a tree simultaneously. Their flight is straight and rapid, and on the wing they utter a shrill little trilling whistle.

In captivity these Colies become very tame, and thrive well on a diet of dates and figs.

163. Colius leucotis Rüpp.

a. ♀. R. Setit, May 12, 1903.

Widely distributed. I have shot it on the Setit River, on the Bahr-el-Ghazal, and at intermediate points on the Blue and White Niles. I do not remember to have seen it frequenting gardens and date-palm groves like the blue-naped species.

164. Schizorhis zonura Rüpp.

a. ♂. Gallabat, April 15, 1903.

The Grey Plantain-eater is generally to be found in small parties among the tall trees in the neighbourhood of Gallabat and on the Upper Atbara. I have not myself met with it elsewhere.

165. Centropus monachus (Rüpp.).

This Lark-heeled Cuckoo is very common on the marshy portions of the White Nile, and in the "sudd" along the Bahr-el-Ghazal and Jur Rivers. It is quite a swamp-bird.

166. Centropus superciliosus Hempr. & Ehr.

a. ♀? Eilafun, Blue Nile, Jan. 2, 1903.

This bird occurs south of the Atbara to the Lower White Nile, and along the Blue Nile to the Abyssinian frontier. It keeps to the thick bush in the vicinity of rivers or cultivated lands, and is of shy and skulking habits. It frequents drier ground than the last species.

167. Coccystes glandarius (Linn.).

The Great Spotted Cuckoo is a rare migrant in the Soudan. I saw one which was wantonly shot by an Italian artisan at Khartoum on July 7th, 1901, and I have met with it a few times in August and September.

168. Cuculus canorus Linn.

a. ♀. Gedaref, April 21, 1901.

The Cuckoo arrives in the Soudan in large flights, but soon practically disappears again until its return journey in the spring. At Khartoum I have noted September 13th as the average date of its arrival. It passes north again from the middle of April to the middle of May.

Many of the autumn arrivals are so exhausted that they can hardly fly; in the spring this is not noticeable.

169. Indicator sparrmani Steph.

The Common Honey-Guide is not rare on the Blue Nile tributaries, Atbara, and Setit. I observed that my native guides, who were professional honey-collectors, always kept an eye on these birds, and declared that they found much of their honey by watching them. One certainly attracted my attention to a comb, round which it was chattering excitedly, but I cannot say that I ever saw these birds make any obvious attempt to attract man's attention. The truth is that the Honey-Guides know of all the bees' nests in their neighbourhood and visit them constantly. By following them about, therefore, one is pretty sure, sooner or later, to find honey.

170. Melanobucco vieilloti (Leach).

a. ♂. Kaka, White Nile, Feb. 24, 1902.

I have met with Vieillot's Barbet occasionally on the White Nile, the Blue Nile and its tributaries the Rahad and Dinder, and on the Setit, but nowhere have I found it very common.

171. Trachyphonus margaritatus (Rüpp.).

a. ♂. Setit River, May 7, 1903.

b. ♂. West of Omdurman, Jan. 3, 1903.

This Barbet is widely distributed. I have noted it from Kassala to Western Kordofan, as far north as Shendi, and south to Fashoda and the Bahr-el-Ghazal. It was abundant at Bara (Kordofan) in April 1904, assembling in the fig-trees in the gardens and drinking at the "shadoofs." It is occasionally met with at great distances from water.

172. Iynx torquilla Linn.

The Wryneck is a regular, but rather scarce, winter-visitor. According to my notes, I have seen it only at Khartoum, in September (earliest date, 12th) and October.

173. Campothera nubica (Gm.).

a. ♂. R. Rahad, April 6, 1901.

b. ♂. „ May 22, 1903.

c. ♂. Jebel Melbis, Kordofan, April 15, 1904.

d. ♂. Roseires, June 20, 1904.

Quite the commonest Woodpecker in the Soudan. I have seen it wherever I have travelled, except, of course, on treeless desert or swamp.

174. Iyngipicus obsoletus (Wagl.).

a. ♀. Kaka, White Nile, Feb. 24, 1902.

b. ♂. R. Rahad, May 22, 1903.

This Pigmy Woodpecker seems as widely distributed as the preceding species, but is very much scarcer.

175. Vinago waalia (Gm.)?

I have frequently seen Green Pigeons in the woods on the Bahr-el-Ghazal, but, never having shot one, I cannot identify the species with certainty.

176. Columba guinea Linn.

a. ♀. Gedaref, May 25, 1901.

The Maroon-backed Rock-Pigeon is common in the rocky gorges of the Upper Atbara, from which it ranges into the surrounding district. I have shot it at Gedaref and Gallabat, and have seen it also at Tewfikia on the White Nile, where I noticed it feeding about the town almost as tamely as a domestic Pigeon.

177. Turtur communis (Selby).

The Turtle-Dove is abundant in the winter and spring.

178. Turtur decipiens Finsch & Hartl.

179. Turtur roseigriseus (Sundev.).

These are quite the commonest Doves in the Soudan. *T. decipiens,* however, seems to keep more to the vicinity of rivers than *T. roseigriseus.* The latter bird I found in thousands round the wells of Bara, in Kordofan, where the former seemed to be entirely absent. I have taken eggs of *T. decipiens* on the White Nile in November.

180. Turtur senegalensis (Linn.).

The Senegal Turtle-Dove is tolerably common, but nothing like so numerous as the two preceding species.

181. Chalcophaps afra (Linn.).

This pretty Dove is not uncommon on both the Niles and their tributaries. I have never seen it in flocks or at any distance from the rivers. The bird reminds me of *Chalcophaps indica* in its flight and gait when on the ground.

182. Œna capensis (Linn.).

a. ♂. Khartoum, Feb. 22, 1903.

The Long-tailed Dove is common throughout the Soudan wherever there are trees or bushes. Considerable numbers come into Khartoum in February, to breed in the gardens, but disappear again after rearing their young. The nest is a small, slight platform of sticks ; the eggs are ivory-coloured, like those of *Chalcophaps indica.* I have taken them in March, April, and May.

183. Pœocephalus meyeri (Rüpp.).

a. ♂. Jebel Melbis, Kordofan, April 4, 1904.
b. ♀. " " " April 5, 1904.

I have seen Meyer's Parrot only in Kordofan, where, from the vicinity of El Obeid to Mazrub, it was met with almost daily, though always in small numbers. The birds were most frequently in pairs, but sometimes in parties of seven or eight. They keep principally to the huge "baobab" trees which in Kordofan are scattered through the thorn-bush, and in these they doubtless breed. They are wary little birds, difficult to approach, and take a good deal of hitting to bring them down.

184. Palæornis docilis (Vieill.).

The Green Paroquet is common and seems to occur wherever there are fair-sized trees south of the 15th degree of N. latitude. On the eastern side of the country it probably ranges further north than this.

185. Strix flammea Linn.

I have seen or heard the Barn-Owl almost everywhere I have travelled in the country.

186. Asio accipitrinus (Pall.).

a. ♀. Kamlin, Blue Nile, March 3, 1903.

I picked up a Short-eared Owl at Khartoum on Nov. 26th, 1902. I saw several, and shot one, on the Blue Nile in March 1903, and in the winter of 1904 I observed the bird several times in gardens at Khartoum.

187. Asio capensis (Smith).

a. ♀. Bahr-el-Homar, March 16, 1902.

My specimen was shot as it rose from a patch of swampy ground near the junction of the Bahr-el-Homar and the Bahr-el-Ghazal. I had previously in February twice flushed Owls of this species from a marshy khor at Kaka.

The high papyrus "sudd" along the Bahr-el-Ghazal is usually full of Owls, which I never managed to identify satisfactorily, owing to the impossibility of retrieving a specimen if I shot it; I think however that they may belong to this species. As a steamer moves up the narrow channel, often brushing the papyrus on both sides, the Owls flap out in front of it, and dive into the cover again fifty yards ahead, only to be driven on again in company with others as the vessel catches them up.

I never saw so many Owls together before or since as I did at this place in February 1902.

188. GLAUCIDIUM PERLATUM (Vieill.).

a. ♀. Jebel Melbis, April 15, 1904.
b. ♀. ,, ,, April 17, 1904.

The little Pearl-spotted Owlet was abundant in the large trees along the khor between El Obeid and Jebel Melbis. Its note is very like that of some of the Scops Owls—a jerky liquid "hoot-coorroo!" I also heard the bird at Bara.

189. SCOPS GIU (Scop.).

a. ♀. Tewfikia, White Nile, March 27, 1902.
b. ♂. Roseires, Blue Nile, April 26, 1904.

I have noticed the Scops Owl only in the winter and spring months (between October 13th and April 26th).

I have seen it at Khartoum, on the White Nile and Bahr-el-Ghazal, on the Blue Nile and its tributary the Dinder.

All the birds which I noticed at Khartoum were sitting asleep in lime-trees, but the specimen shot at Tewfikia was asleep on the ground, rather an unusual resting-place for a Scops Owl.

190. SCOPS LEUCOTIS (Temm.).

I saw an individual, close enough to recognise, sitting in a thorn-tree at Gallabat on April 13th, 1903. I had a good look at it, but it flew away just before I could get my collecting-gun, which was on a lagging camel. I have seen no other specimens except those collected by Mr. Rothschild at Shendi, some of which he shewed me in the flesh.

191. BUBO ASCALAPHUS Sav.

The Desert Eagle-Owl is not an uncommon bird on the rocky hills or "Jebels" which are scattered over the sandy wastes of the Soudan. I have seen it at Shendi, west of Omdurman, and on Jebel Melbis in Kordofan. Sometimes, though rarely, an individual wanders into the town of Khartoum from the neighbouring hills, and takes refuge in a date-palm, where, however, the swarming Kites give it so little rest that it makes but a short stay.

192. **Bubo cinerascens** Guér.

a. ♂. Gedaref, May 15, 1901.
b. ♀. „ „ „

A common Owl in the Soudan. I have met with it at Gedaref, on the Rahad, and at various points on the White and Blue Niles and the Bahr-el-Ghazal. At Gedaref I once put five out of a small cave on a rocky hill. It is a very wide-awake bird, and difficult to approach after it has once been disturbed. The note is a monosyllabic hoot.

193. **Pandion haliaëtus** (Linn.).

On both the Niles the Osprey is not uncommon. It is occasionally seen at Khartoum.

194. **Falco sacer** Gm.

The Saker Falcon seems rare. I have one alive which was caught at Khartoum in October 1904. According to the old native woman from whom I bought it, two of these birds fell gyrating from the clouds, locked in a desperate struggle, and allowed her to throw a cloth over them on the ground, but one managed to escape.

I have seen the bird a few times in the deserts of the Northern Soudan.

195. **Falco barbarus** Linn.

a. ♂. Rufaa, Blue Nile, June 19, 1901.

This specimen was one of a pair which frequented a group of date-palms at Rufaa, and was apparently breeding, or had just bred. The Barbary Falcon seems scarce; the only other time that I have identified it with certainty was at Duem, on the 29th of September, 1902.

It is a far finer Falcon on the wing than the Lanner.

196. **Falco feldeggi** Schl.

a. ♀. Khartoum, Oct. 15, 1902.
b. ♂. „ Oct. 25, 1902.

c. ♀? Khartoum, Nov. 25, 1902.
d. ♀? „ Nov. 26, 1902.
e. ♂. „ Dec. 2, 1902.
f. ♂. „ Dec. 23, 1902.

The Lanner is quite the commonest Falcon along the White and Blue Niles. There is almost always a pair frequenting the palm-trees of Khartoum, but it is very seldom that more than two of the birds are seen in the neighbourhood at the same time. If, however, one of them is shot, it is sure to be replaced by a new arrival within a day or two. This happened half a dozen times in the winter of 1902 when I shot my specimens.

The Khartoum Falcons go a great distance up the White Nile during the day in search of the small Waders, Wagtails, &c. which crowd its banks, usually returning to roost in the date-palms about half an hour after sunset. They always take exactly the same line, and come rushing home through the gathering gloom at a tremendous speed. Almost all my specimens were shot in the evening by waiting for them at the same point. All of them, with the exception of a beautiful adult male, are in the brown plumage of immaturity, some shewing a few grey feathers on the back. One of them had a Blackcap Warbler in its claws, which was so little damaged as to make a good skin.

The following notes on the species are from my diaries :—

"March 22, 1901. Visiting the old quarry at the Meroë pyramids with Rothschild and Wollaston we disturbed a quantity of bats, and as they flew out into the open a pair of Lanner Falcons appeared and began hawking them vigorously, each quickly catching one. Later, we found their nest with three young in down on one of the pyramids. A Bateleur Eagle which passed close to the nest was attacked and driven off."

"Dec. 2, 1902. A Lanner Falcon picked up a little Ringed Plover close to me wonderfully smartly this evening. The Plover was toddling along on the mud within a few yards of me; the Falcon came down at a slant with a rush like a hurricane. As he struck the Plover he lowered and spread his tail, which scraped the mud for a yard or so and checked him just for an instant. Next second he was away again with his victim in his foot. The Plover never saw him coming, and had not even time to spread its wings."

"Jan. 1st, 1903. This evening I saw a Harrier (*Circus macrurus*) with a bird in its claws, closely pursued by two Kites which were trying to rob it of its prey. The Harrier succeeded for some time in holding its own, though repeatedly buffeted by its pursuers, when a Lanner dropped down on the three wheeling birds like a veritable bolt from the blue. Dropping its prey the Harrier just dodged the stoop; right and left the Kites dashed outwards in dire alarm; right through the tree the Falcon shot, caught the falling bird thirty feet below them, curved instantly upwards again, and with rapid driving strokes of its rigid sickle wings was gone as suddenly as it came."

197. FALCO TANYPTERUS Schl.

a. ♂. Dinder River, May 1903.
b. ♂. Bara, Kordofan, April 1904.

I should call this Falcon scarce, and am inclined to think that the birds which Mr. Witherby took for this species, and noted as "fairly frequent from Duem southwards," were *Falco feldeggi*. Mr. Hawker found the Lanner to be the common Falcon of the White Nile, and my experience has been the same.

198. FALCO RUFICOLLIS Swainson.

a. ♂. Tewfikia, March 26, 1902.
b. ♂. Roseires, Feb. 9, 1904.

I have only met with the Red-headed Merlin near Tewfikia and Fashoda. I have also a skin from Roseires obtained by Mr. Middleton. It is generally found frequenting *Borassus* palms.

199. FALCO SUBBUTEO Linn.

I saw a Hobby at Gedaref on May 27th, 1901, hawking among some Swifts just before a thunder-storm; and another at Sherif Yakub on the Rahad in June. In 1904 I also observed one in May on the Blue Nile. It seems decidedly scarce.

200. Erythropus vespertinus (Linn.).

a. ♂. Khartoum, Oct. 1, 1901.
b. ♀. ,, Nov. 23, 1902.

The Red-footed Hobby is occasionally met with near Khartoum in the winter—more often in scattered flights than singly. At times I have seen as many as a dozen hovering over the cultivated lands. While the Kestrel so frequently settles on the telegraph *posts*, this smaller-footed bird is generally to be seen sitting on the *wires*.

201. Tinnunculus alaudarius (Gm.).

a. ♂. Khartoum, Feb. 9, 1904.

The Common Kestrel is abundant throughout the country from September until March, and I noticed it once at Khartoum on July 12th, but it is seldom seen in the hot months. I have observed it from the Abyssinian frontier to Meshra-el-Rek on the Bahr-el-Ghazal.

Tinnunculus alopex (Heugl.) I have sought for in vain.

202. Tinnunculus cenchris (Naumann).

a. ♂. Gedaref, April 1901.

I saw the Lesser Kestrel several times on the rocky hills round Gedaref in April 1901, but have not come across it since.

203. Elanus cæruleus (Desf.).

The Black-shouldered Kite is a common bird in the country round Gedaref, frequenting rocky hills, open grassy plains, and thin bush. I have also met with it, though less often, on the White Nile and Bahr-el-Ghazal. It is one of the earliest birds astir in the morning, and may often be seen hovering Kestrel-like over the plains in the grey light of dawn.

204. Nauclerus riocouri (Vieill. & Oud.).

The African Swallow-tailed Kite seems decidedly scarce in most parts of the country. I saw one example on April 8th, 1901, at the wells of Fou (between Wad Medina and Gedaref), but did not meet with another until April 1904, when I saw this bird singly on several occasions west of Mazrub in Kordofan.

205. Milvus ægyptius (Gm.).

The Egyptian Kite is abundant throughout the whole Soudan. In the towns it is a useful scavenger and an impudent thief, becoming very fearless, though always crafty, where it is used to the daily presence of man. On one occasion, at Gallabat, a Kite snatched away a bird (*Laniarius erythrogaster*) which I was skinning at a table in the open air, scratching my hand deeply in doing so. I have seen it commit other thefts as bold.

In the bush it always follows grass-fires to feed on the insects which are driven up by the flames, and attends herds of the larger game-animals in the same manner to catch the locusts disturbed by their passage.

206. Haliaëtus vocifer (Daud.).

The African River-Eagle is common on both the White and Blue Niles, being more and more frequently met with as the traveller ascends the rivers. On the smaller waters I do not remember having seen it.

Mr. G. B. Middleton brought me two tiny nestlings, covered with white down, from the White Nile in October 1904. These are now well-grown birds, and very tame, but one of them has deformed feet, and can only move about on its houghs. There was a third egg in the nest, containing another chick, but this was broken under the impression that it was addled.

207. Helotarsus ecaudatus (Daud.).

The Bateleur Eagle, though nowhere abundant, occurs all over the Soudan. I have seen it from Shendi in the north to the White Nile and Bahr-el-Ghazal, and from the Abyssinian frontier to Western Kordofan.

To my mind this is the most beautiful Eagle in the country, and its flight is always a delight to me to watch. The buoyant power of the bird, as it sails for miles with hardly a stroke of its rigid upturned pinions, is a sight to be seen. The extreme shortness of the tail gives the Bateleur a crescent shape in flight which is quite peculiar to it; the black of the heavy-looking head and breast contrasts strongly with the silvery white of the under wing as it soars through the brilliant African sunlight; while, if the bird is near enough, the red of the bill and feet forms a further touch of vivid colour.

This Eagle has a powerful cry, which on paper might be rendered as "*ka-ow!*" It is, however, very silent as a rule.

I have seen a pair of Bateleurs circling over a female *Oryx leucoryx* which had a newly-born calf under her, and, though they made no attempt to attack, the anxiety of the mother was obvious.

208. Aquila rapax (Temm.).

a. ♂. Jan. 30, 1903.

b. ♀. Um Dam, Kordofan, May 5, 1904.

The Tawny Eagle is not uncommon. It seems to be more plentiful in Kordofan than in any other part of the country that I have visited. I purchased a young bird at Fashoda in April 1902, which is still living in the Zoological Gardens at Cairo.

The specimen shot at Khartoum was drinking at the edge of the river in the centre of a group of Egyptian Geese. Its crop contained pieces of putrid goat's flesh and skin.

209. Aquila nipalensis Hodgs.

Lt.-Col. Penton, D.S.O., has shewed me the skin of an Eagle which he shot at Um Dam (Kordofan) in 1903. I think that it belongs to this Steppe-Eagle, but I am not familiar with the bird, and am not positive about my identification.

210. Lophoaëtus occipitalis (Daud.).

The Black-crested Eagle is fairly common throughout the forest-country of the Soudan. I have noted it at Gallabat, on the Blue Nile, Rahad, and Dinder, on the White Nile and on the Bahr-el-Ghazal. In the sandy bush-plains of Western Kordofan it seems to be absent.

Though such a handsome Eagle it is rather ignoble on the wing, the flight being somewhat Kite-like, but not so graceful.

211. Buteo desertorum (Daud.).

a. ♀. Khartoum, Nov. 11, 1902.
b. ♂. „ Oct. 1902.

The Desert-Buzzard is often to be seen in and about Khartoum during the cold months. It frequents the date-palms in the town in the same manner as the Kites.

212. Butastur rufipennis (Sundev.).

I have noted the Red-winged Buzzard-Eagle between Gedaref and Gallabat (May 1901); from Duem to the Bahr-el-Ghazal (Feb. and March 1902); very numerous from a little south of Khartoum to Kawa (Sept. 30th to Oct. 2nd, 1902), but not anywhere on the same run six weeks later. I have also met with it on the Rahad and Dinder Rivers (May 1903). It is more or less migratory, being much more abundant at some times than others. In habits it is a quiet, rather sluggish bird, fond of perching on a prominent reed or stick in the swamps of the White Nile, and feeding largely upon insects.

213. Melierax polyzonus (Rüpp.).

a. ♀. Sherif Yakub, Blue Nile, April 4, 1901.
b. ♂. Roseires, Dec. 1902.

This fine Hawk is very common in the Soudan, and I have seen it practically everywhere I have travelled. It is rather a sluggish bird and generally allows a near approach; the red cere and legs shew up brightly against its blue-grey plumage.

Besides my own specimens I have examined others, and have shot birds in widely separated parts of the Soudan. I do not think that any allied species, such as *Melierax metabates* Heugl.* exists in the country, and consider that this name, as has been suggested, should be relegated to the position of a synonym.

I took a nest of this bird containing one hard-set egg at a village near the Atbara on April 26th, 1903. It was a slight structure of sticks, unlined, and was placed on the horizontal bough of an acacia. The egg was dirty white, with the inside of the shell greenish.

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* *Cf.* Salvadori, Ibis, 1904, p. 248.

214. MELIERAX GABAR (Daud.).

a. ♀ jr. Khartoum, Feb. 9, 1902.

b. ♂ (var. *niger*). Khartoum, Oct. 21, 1902.

c. ♂ ad. Roseires, Blue Nile, Dec. 1902.

The Red-faced Chanting-Hawk is fairly abundant in winter and spring, but seems to disappear from the country in the hot months of June, July, and August. It arrives at Khartoum in considerable numbers at the end of September, and at first keeps together in threes and fours, but after a few weeks the numbers diminish and the majority seem to pass on. Immature birds far outnumber the adults. I cannot consider *Melierax niger*, though it has stood as a species for so long, anything more than a melanistic form of this bird. Apart from colour, it is absolutely the same in measurements, plumage, and structure of the feet. A few of these black birds always arrive among the flights of the others, and are commonly members of the little parties which follow each other from tree to tree. In no case can I find that *M. niger* occurs where *M. gabar* does not.

Looking through the series of skins in the British Museum, I was struck with the irregularity of the colouring of the feet, which may be entirely black or only mottled with it. This, again, looks like melanism. Among the series was a black skin from Somaliland, obtained by my friend Captain H. N. Dunn, together with a typical *M. gabar*, and marked "melanistic variety."

That these black birds are specifically distinct I cannot believe. I think that they form an exactly similar case to that of the well-known "Sabine's Snipe."

215. ASTUR UNDULIVENTER (Rüpp.)?

On March 19th I shot a beautiful little bright grey Sparrow-Hawk with orange eyes on the Bahr-el-Ghazal, but that night the mosquitoes made skinning an impossibility and I did not preserve it. I think, from memory, that it belonged to this species.

216. Circus macrurus (Gm.).

a. ♂ ad. Khartoum, Oct. 28, 1902.
b. ♂ jr. ,, Oct. 29, 1902.

The Pale Harrier is common in the winter and spring, keeping mostly to the neighbourhood of the rivers. I have repeatedly seen it capture the Wagtails which swarm on the White Nile. Its *modus operandi* is to glide low and swiftly along the banks with the frightened Wagtails dashing up underneath it, until some bewildered bird flutters almost into its claws.

217. Circus æruginosus (Linn.).

a. ♀. Khartoum, Feb. 1903.

The Marsh-Harrier is a common cold-weather visitor. At Khartoum, just at sunset, the birds come in from the White Nile in steady succession to roost in the bean-crops. At that hour I have frequently seen twenty-five or thirty in a few minutes.

218. Serpentarius secretarius (Scop.).

I have never come across the Secretary-Bird myself. This is rather curious, as, though scarce, it seems to be widely distributed. I have had it brought to me alive from the White Nile and from Kordofan, and I know that it occurs in the Kassala district.

219. Vultur monachus Linn.

The Black Vulture is most often seen in the northern parts of the Soudan. It seems to be much less numerous than the two following species.

220. Otogyps auricularis (Daud.).

The Sociable Vulture is common, but less so than the next species. It also seems to be a more shy bird.

221. Gyps rueppelli (Brehm).

This seems to be the commonest large Vulture in the country.

222. Gyps kolbii (Daud.).

This handsome Vulture is common on the eastern side of the Soudan. I have seen it on the Rahad, Dinder, Atbara, and Setit Rivers.

223. Neophron percnopterus (Linn.).

The Egyptian Scavenger-Vulture is extremely plentiful over all the northern parts of the country, breeding in the early spring on the rocky "jebels" of the desert or on trees near the villages. It sometimes takes to feeding on dates when they are ripe.

On one occasion the owner of a small date-palm-grove on the Blue Nile came and asked me to shoot a pair of these birds which had a nest in his garden, and were doing much damage to the dates. I went and had a look at the nest, on which the female bird—partly in the brown plumage of immaturity—was sitting, while the male was in the act of eating the dates on an adjacent palm, but, as my gun was not handy, I left without shooting the delinquents.

In Khartoum, where these Vultures abound, they pass the early hours of the morning in scavenging about the streets. During the heat of the day they collect in great numbers on the sandbanks of Tuti Island, opposite the town, where they sit in rows along the water's edge, drinking occasionally. Between two and three in the afternoon they all rise and spend an hour or so soaring in circles in the air.

I once saw one of these birds at Meshra-el-Rek on the Bahr-el-Ghazal, but they become rare on the White Nile before Fashoda is reached, and at that station and south of it are replaced by the next species.

224. Neophron monachus (Temm.).

This Vulture takes the place of the last on the Upper White Nile and Bahr-el-Ghazal. It is first met with near Renk, and at Fashoda almost entirely replaces *N. percnopterus.* The habits of both birds are identical.

225. Ibis æthiopica (Lath.).

The Sacred Ibis is tolerably common on all the rivers from Khartoum southwards.

226. Geronticus hagedash (Lath.).

The Hagedash Ibis is abundant on the White Nile. It has a particularly harsh cry, which it utters whenever it is alarmed.

227. Plegadis falcinellus (Linn.).

The Glossy Ibis, though widely distributed and fairly common, is much less plentiful than the Hagedash.

228. Platalea leucorodia (Linn.).

229. Platalea alba Scop.

Both the Common and the African Spoonbill are fairly plentiful on the larger rivers.

230. Ardea purpurea Linn.

231. Ardea cinerea Linn.

Both the Purple and the Common Heron are very abundant, and are to be found almost wherever there is water.

232. Ardea melanocephala Vig. & Childr.

233. Ardea goliath Cretzschm.

Both the Black-headed and the Goliath Heron are common on the Blue Nile, and the White Nile and its tributaries, but less so than the last two species. I have not noted either of them much north of Khartoum.

234. Herodias brachyrhyncha Brehm.

235. Herodias alba (Linn.).

The Short-toed Egret is a common river-bird, while the Great White Egret is considerably rarer. The first species breeds regularly at Kamlin on the Blue Nile, and also at El Obeid in Kordofan, where it arrives with the first rains and nests in thorn-trees in the town.

236. Herodias ralloides (Scop.).

The Squacco Heron is a tolerably common bird on the White Nile.

237. Herodias bubulcus (Aud.).

The Buff-backed Heron is fairly common on the White Nile, becoming abundant in the "sudd" district of the Bahr-el-Ghazal, Jur River, &c. It breeds in the "ambatch" along these rivers, and usually congregates in small flocks.

238. Nycticorax griseus (Linn.).

The Night-Heron is common. Immature birds in the spotted grey plumage are always abundant in September and October.

239. Botaurus stellaris (Linn.).

A beautiful specimen of the Common Bittern was picked up at Khartoum in an exhausted and dying condition, and brought to me in November 1904. This is the only time that I have seen it here.

240. Ardetta minuta Linn.

The Little Bittern is a tolerably common bird in the cold weather, but, except just at the time of migration, is only met with in small numbers. On April 29th, 1901, I saw large quantities of these birds passing over Gedaref, and again three days later came upon considerable numbers on migration between that place and Gallabat.

They usually arrive at Khartoum about the beginning of October, and are then commonly found resting during the day in the lime-trees in the gardens.

241. Butorides atricapillus (Afzel.).

The African Green Bittern is not very common.

I found quite a gathering of these birds on the little stream at Gallabat in May 1901, and also saw a specimen shot at Khartoum on July 12th of the same year. I have observed this species on the White Nile, and on one occasion noticed it from the train between Shendi and the Atbara.

242. Balæniceps rex Gould.

a. ♀. Bahr-el-Ghazal, March 23, 1902.

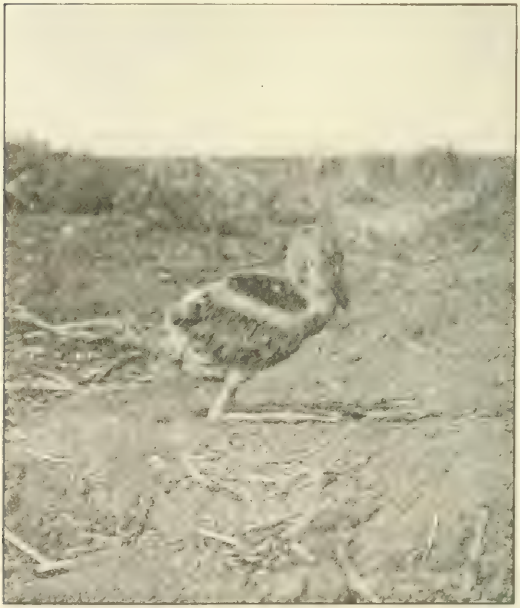
b. Nestling (in alcohol). Jur River, Feb. 1902.

The Whale-headed Stork inhabits the swamps of the Bahr-el-Ghazal from Lake No to Meshra-el-Rek, as well as its tributary the Jur River, and the "sudd" portion of the Bahr-el-Jebel near Shambé.

The following extracts from my diary for March 1902 will give an idea of its numbers at that season on the Bahr-el-Ghazal:—

March 2nd. Lake No, saw two.
,, 3rd. Bahr-el-Ghazal, passed five.
,, 5th. ,, ,, saw three.
,, 6th. ,, ,, saw one.
,, 9th. Meshra-el-Rek, saw one.
,, 10th. Jur River, saw twenty or so.
,, 11th. ,, ,, saw twenty or so.
,, 12th. ,, ,, saw twenty or so again.
,, (From the 13th to 22nd, I was inland.)
,, 23rd. Bahr-el-Ghazal, saw seven or eight; ♀ shot.

Text-fig. 19.



Chick of *Balæniceps rex.*

The habits of *Balæniceps* are morose and solitary. I never saw more than two or three together, and they were generally standing twenty yards apart. Nor did I ever see them in close company with any other species. They seem of a very sluggish nature, and I seldom observed them on the wing, unless put up by our steamer. On one occasion, however, I saw an individual soaring in circles high in the air like an Adjutant. Lieut. Fell, R.N., tells me that he has occasionally noticed the same habit. I believe the stories about *Balæniceps* crushing shell-fish to be a myth. After a considerable experience of this bird in captivity I have never known it attempt to eat shell-fish that were offered it. The bird is a fisher pure and simple, but, doubtless, like a Heron, will eat any small mammal or young water-bird that comes within its reach. Heron-like, *Balæniceps*, instead of searching for his prey, waits patiently for it to come to him. He is generally to be seen standing motionless on newly-burnt swampy ground or short grass flooded with an inch or two of water, inside the fringe of papyrus or "um suf" sudd which separates the channel of the Bahr-el-Ghazal from the plains. I never saw the bird actually wading in water. It almost invariably stands in the same attitude, with the great bill resting on the breast. Its food consists principally of *Polypterus senegalus*, which wanders a great deal into flooded grass-land. Sometimes the bird will perch on the top of a tree, but trees are scarce in its haunts. Its flight is heavy, but powerful; the neck is drawn back like a Heron's, the bill resting downwards against the breast. The first few primaries are widely separated in flight, as in an Adjutant rather than a Heron; indeed its flight struck me as more like that of an Adjutant than that of the Giant Heron, to which Captain Flower compares it.

The Arabic name of the bird is "Abu markûb" (Father of a slipper), and not, as given by Sir Harry Johnston, "Abu merkâb" (Father of a boat).

In captivity the Whale-headed Stork seems to do well. Sir Reginald and Lady Wingate have been successful in keeping one alive at the Palace in Khartoum for three years. Photographs of this specimen have been published in various papers, and once in 'The Ibis'*. It was originally brought down from the Bahr-el-Ghazal by Col. Sparkes, C.M.G., who had tipped its wing with a rifle-shot, and it is,

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* See Ibis, 1902, p. 528.

I think, a very old bird. It is fed entirely on small fishes, or, when these cannot be procured, pieces of fish given to it in a bucket of water. It seems to be rather a quarrelsome bird: on its first arrival in Khartoum it seized a fox-terrier which approached it so sharply that the dog fairly yelled; on another occasion it promptly attacked a younger bird of its own species, which I introduced to it as a companion, driving the hook of its upper mandible deeply through the horny sheath of the other's bill. It is capable of inflicting a powerful bite, the sharp cutting-edges of the mandibles leaving four deep cuts on a wrist or finger. This individual shews no disposition whatever to enter water, and seems to prefer the driest and sunniest spots in the garden.

In February 1902 two *Balæniceps* nestlings were procured by Lieut. Fell, R.N., from the natives on the Jur River, and sent down to me to take charge of (see text-fig. 19, p. 374). I happened to meet them on the river, and they shared my boat for some time. One unfortunately died of suffocation, caused by a bunch of threadworms passing up into its throat; the other, along with two more subsequently obtained by the same officer from the same locality, throve well, and these three birds are now in the Egyptian Zoological Gardens at Giza in the best of health. They have a curious trick of repeatedly bringing up their food before finally swallowing and retaining it; this often results in the disgorged fishes being snatched up by Kites, and the birds require careful watching to prevent their losing much of their food in this way.

Balæniceps in captivity, when approached by anyone that it knows, frequently raises its head in the air and clatters its bill rapidly and loudly, the only Stork-like trait which it shews.

Nestlings are covered with grey down of a fulvous tinge. On account of its rarity and interest, and the restricted area that it inhabits, this bird is most strictly protected by the Soudan Government.

My female specimen was shot, by permission, for the Cambridge University Museum of Zoology, and was presented to that institution by Sir Reginald Wingate. It has been well mounted, in a correct attitude, and is rightly much valued. Obtaining a specimen is a matter of considerable difficulty. The birds are very wild, and long rifle-shots from a moving and vibrating steamer are not easy to bring off. In this particular case, after I had quite finished with the bird (*i. e.* missed it standing at 100 yards) Mr. Middleton, the Engineer of the 'Metemmeh,' whom I had asked to assist me in getting a specimen, cut it down in full flight with a ·303 at a long distance—a very pretty, if not lucky, shot.

The measurements of this example (♀) were:—Length 47 inches; tail 11; tarsus 10; wing $26\frac{3}{4}$.

The stomach contained four fishes (*Polypterus* from 5 to 6 inches long) and the jaw of a rat. This bird had distinct, but irregular and not very deep, pectinations on the middle claws.

The exact breeding-place of this bird described by Petherick has not been rediscovered. Our nestlings were obtained from the Dinka natives on the Jur River. The only first-hand information about its breeding-habits which I have been able to obtain is from Col.-Sergt. Sears, Egyptian Army, who has been a good deal employed in sudd-cutting operations in this region. He tells me that he has frequently seen the nests with young birds, on the plains inland from the Jur, at the end of March and beginning of April. He describes the nests as mere flattened-down spots in the high grass on dry ground; they were found singly, and not in colonies, and contained one or two young only in each case. The eggs he had never seen.

In its solitary nature, its motionless watching for its prey, and the nature of its food, as in the colour of its plumage and the presence of "powder-down" patches, *Balæniceps* is a Heron, though an aberrant one, and seems to have little affinity with the Storks.

243. Scopus umbretta Gmel.

The curious Hammerhead, though nowhere very abundant, occurs in certain places from east to west of the country south of about the 16th degree of N. lat.

It reaches Kassala in the rains, remaining as long as the pools continue to hold water. At Gallabat in May 1901 I found numerous large water-birds gathered together at the pools in the little khor, and among these the Hammerhead was common. Other birds noticed at the same time were Sacred Ibises, Wood-Ibises, Little Cormorants, and Green Bitterns.

This bird is common along the Upper White Nile and Bahr-el-Ghazal. On the latter river I found an empty nest in March 1902—a great domed mass of sticks with the entrance at the side.

244. Ciconia alba Bechst.

The White Stork is a common winter migrant. It usually disappears by the end of April, but in 1901 I saw considerable numbers on the Blue Nile from June 18th to 22nd.

245. Ciconia nigra (Linn.).

Also a cold-weather visitor, but very much scarcer than the last.

246. Ciconia abdimii Licht.

This handsome little Stork is resident in the Soudan, but its numbers are immensely increased in the spring. At that season it migrates for breeding-purposes to parts of the country from which it is entirely absent in the cold months. It has all the domestic habits of the Common Stork while breeding, and flocks to native villages to build its nests on the tops of the straw-thatched conical huts or "tukls."

I passed the month of April 1901 at Gedaref with the late Col. Collinson. During that month we never saw any of these Storks in the district. Col. Collinson told me that they arrived in great numbers every year about May 6th, and set to work at building their nests at once. We left together for Gallabat on May 2nd, and on our return on the 13th Gedaref was crowded with these Storks, which were building on nearly every "tukl."

The few trees in the town were also crowded with nests.

In their breeding-quarters the birds were extremely tame, taking no notice of people within a few feet of them, but the same birds when feeding on the plain round the town were very difficult to approach.

The soft parts of a breeding male which I shot were coloured as follows:—Bill dirty greenish olive, with the tips of the mandibles reddish. Throat and space between the *rami* of the mandible scarlet. A patch over, and joined to one in front of, the eye also scarlet. Skin of the forehead fleshy pink. The rest of the bare skin on the face bright French blue. Legs dirty greenish grey, with the knees and toes reddish.

On leaving Gedaref a few days later I found almost all the villages between that place and the Blue Nile similarly occupied by colonies of these Storks, which were then sitting on their eggs. They were also breeding along the Blue Nile between Wad Medani and Khartoum. In the latter town I have known the bird breed once or twice, but in single pairs only, nesting on date-palms.

247. Dissura episcopus (Bodd.).

The White-necked Stork is rather scarce. I have seen it at various points on both Niles.

248. Mycteria senegalensis (Shaw).

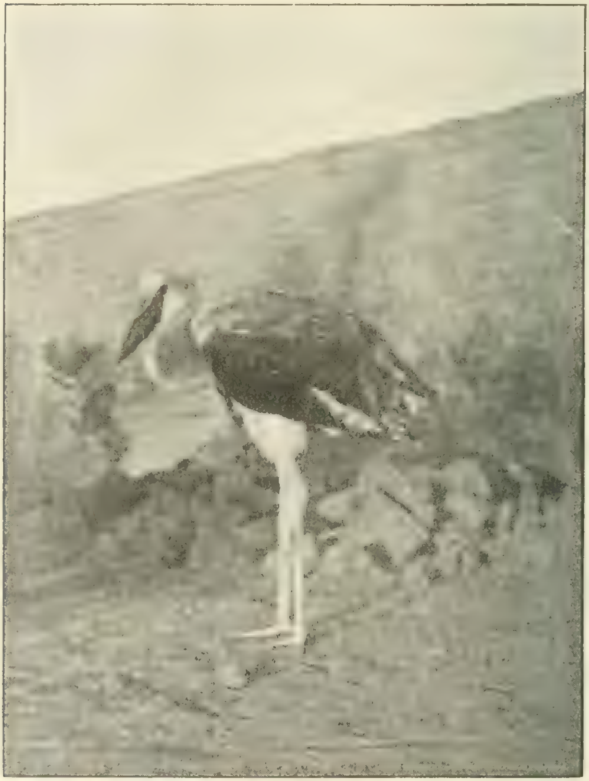
This magnificent Jabiru occurs on the Upper Blue Nile, and on the White Nile, Bahr-el-Jebel, Sobat, &c. I have not seen it further north than Jebel Ain. It is generally found in pairs or in small parties of four or five, searching for frogs and small fishes along marshy banks and khors. It is by no means abundant, but from its great size and brilliant colouring is sure to attract attention whenever met with.

I saw none in the marshes of the Bahr-el-Ghazal in March 1902. In fact, it seems to cease just where *Balæniceps rex* begins, as if these two giant birds avoided each other by mutual arrangement. But Captain Flower appears to have found it there. As it nests on trees, it probably leaves these treeless swamps at certain seasons.

Mr. G. B. Middleton told me that he once saw a nest of this Stork about forty miles north of Fashoda, on the east bank. The nest was built on an old "Heglik" tree. It was a large flat mass of sticks, placed about twenty feet from the ground. The tree was about two miles inland, beyond the swamp-belt, in the open forest. The nest contained one white egg, which was so near hatching that Mr. Middleton failed to preserve it.

At the present time (February 1905) I have two fine young birds alive (see text-fig. 20). They were sent in December from the Sobat by the gentlemen of the American Mission, and are destined for the Giza Zoological Gardens. There

Text-fig. 20.



Young of *Mycteria senegalensis.*

were three of these nestlings despatched, but only two reached me alive. The general colour of the plumage is lustreless greyish black; the head and neck are covered with grey down; the bill is blackish, with only a slight indication of red at the tip; the "saddle" at the base of it is blackish and edged with a fringe of whitish down.

249. LEPTOPTILUS CRUMENIFER (Cuv.).

The great scavenging Adjutant is fairly common everywhere in the vicinity of water. On the White Nile it collects in great numbers when any large animal is killed, and is a regular camp-follower of the big-game hunter. The quarrels which take place between this bird and the Vultures over a carcase are most amusing to watch.

There must be immense breeding-colonies of Adjutants somewhere in the Soudan, though I have never found one. I have, however, heard vague rumours from natives of a great nesting-place in the neighbourhood of the Bahr-el-Arab. Adjutants are comparatively scarce along the White Nile in September and October, and I am inclined to think that they breed about that season.

250. ANASTOMUS LAMELLIGERUS Temm. (Open-billed Stork.)

251. PSEUDOTANTALUS IBIS (Linn.). (African Wood-Ibis.)

252. PHALACROCORAX AFRICANUS (Gmel.). (Little African Cormorant.)

253. PLOTUS RUFUS Daud. (African Darter.)

These four birds are all of wide distribution on the Soudan rivers.

254. PELECANUS ONOCROTALUS Linn.

The Common Pelican is abundant on the Soudan waters. Immense gatherings are often seen on the rivers or on inland lagoons. Some of these large flocks must consume tons of fish in a week.

255. PELECANUS RUFESCENS Gmel.

This is also a common bird in the Soudan, but I have never seen it in anything like such numbers as the last species.

256. **Hydrochelidon leucoptera** (Meisner & Schinz).

257. **Hydrochelidon hybrida** (Pall.).

258. **Hydrochelidon nigra** (Linn.).

259. **Sterna anglica** Mont.

260. **Sterna caspia** Pall.

All these Terns are common winter visitors to the White Nile, remaining far into May, by which time they have acquired their full breeding-plumage.

I have seen *Sterna caspia* at Khartoum on July 8th.

261. **Rhynchops flaviventris** Vieill.

a. ♀. Khartoum, Sept. 1905.

The African Skimmer is a common bird on those parts of the Nile where there are sand-banks on which it can rest. In the "sudd" regions of the Upper White Nile I have not seen it. The bird is crepuscular in its habits, and spends most of the day resting in small flocks on the sand-banks.

Mr. W. G. Percival tells me that he found many nests on some little islands opposite the mouth of the Atbara in April. They were generally deeply scraped hollows, often surrounded with a collection of small shells, and contained two or three eggs.

262. **Larus fuscus** Linn.

A few Lesser Black-backed Gulls are generally to be seen on the White Nile in winter, but they are rare compared with the Terns.

263. **Phœnicopterus** sp. inc.

I have only once or twice seen a Flamingo on the White Nile.

264. **Plectropterus rueppelli** Sclat.

Rüppell's Spur-winged Goose is fairly common on all the Soudan waters south of Khartoum, but nothing like so abundant as the Egyptian Goose. This species and the Comb-Goose are most plentiful in the swamp and "sudd" portions of the country, which the Egyptian Goose cares for least.

I have never seen so many as in April 1903, when I found thousands collected on a lonely lagoon called Ras Amir, between the Rahad and Dinder Rivers.

The Spur-wing is one of the worst birds imaginable for food, being coarse, rank, and fishy.

265. Sarcidiornis melanonota (Penn.).

The "Nukta" is very abundant in the swampy regions of the Upper White Nile. In March 1902 I saw it in great numbers on the Bahr-el-Ghazal and Jur Rivers, and in smaller quantities northwards to Duem. It seems a better bird for the table in the Soudan than in India.

266. Nettopus auritus (Bodd.).

a. ♂. Bahr-el-Ghazal, March 1902.

I have only met with this charming little bird on the secluded waters of the Bahr-el-Ghazal, near Meshra-el-Rek. There it is not uncommon in small parties of five or six. Like other Cotton-Teal it is very swift on the wing.

267. Dendrocycna viduata (Linn.).

The pretty White-faced Whistling-Teal is a common resident species. I have seen it from Gedaref on the east to El Obeid in Kordofan, and from Khartoum the whole way up the White Nile and Bahr-el-Ghazal. At Khartoum it is only common in winter and spring, when the falling Nile exposes the mud-banks and islands. In the rains it may be found on many inland pools and water-courses which are dry in the hot weather.

268. Dendrocycna fulva (Gm.).

I have only come across the Larger Whistling-Teal once, at Kaka on the White Nile, on September 28th, 1902, when I shot one from among a flock of the White-faced species.

269. Chenalopex ægyptiacus (Linn.).

The Egyptian Goose is common throughout the Soudan, but nowhere more abundant than on the White Nile a little south of Khartoum. Further up the river, where the mud-banks give way to marshes and "sudd," its numbers decrease.

I am inclined to think that the autumn and earlier months of winter are its principal breeding-seasons. At any rate by February immense packs congregate, with many immature birds among them, while in this month a large proportion of the old birds are in full moult, and, having shed all their flight-feathers simultaneously, are quite incapable of rising from the water. I have seen at least sixty in this condition out of a flock of about two hundred. I have also seen pairs accompanied by small goslings in the same month. Mr. Hawker's experience seems to have been much the same, but Mr. Witherby describes them as mating at the end of April. Doubtless a certain number breed at all times of the year.

270. TADORNA CASARCA (Linn.).

The Ruddy Sheldrake is abundant on the White Nile during the winter. It associates more with the Egyptian Geese than with the Ducks, and, like the Geese, rests during the day in large gatherings on the banks, instead of on the water.

271. MARECA PENELOPE (Linn.).

One of our less abundant Ducks in the winter. I have shot it several times at Khartoum.

272. QUERQUEDULA CRECCA (Linn.).

Fairly plentiful on the rivers from October until March. I have several times shot it at Khartoum.

273. QUERQUEDULA CIRCIA (Linn.).

a. ♂. Khartoum, Sept. 28, 1902.

The Garganey Teal is abundant—much more so than the last species—in the winter and spring.

274. DAFILA ACUTA (Linn.).

a. ♀. Khartoum, Dec. 19, 1902.

The Pintail is the most abundant of the northern Ducks which winter in the Soudan. It arrives at the end of September or beginning of October, and may be met with as late as the end of May.

275. SPATULA CLYPEATA (Linn.).

a. ○. Khartoum.

The Shoveler is a common Duck in the winter, and remains late into the spring.

276. Fuligula cristata (Leach).

I have occasionally observed the Tufted Duck on the White Nile in the winter, but have never shot it, or seen one shot.

277. Podicipes capensis Licht.

Mr. G. B. Middleton shewed me the skin of a Dabchick which he had shot on the Bahr-el-Ghazal. I have seen it myself once or twice on the lagoons of the same river.

278. Fulica atra Linn.

I was shown a Coot which had been shot on the White Nile just south of Khartoum in December 1903. This is the only time that I have been able to note its occurrence here.

279. Gallinula chloropus (Linn.).

An exhausted Waterhen, caught alive at Khartoum in October 1904, is the only one that I have seen here.

280. Crex pratensis Bechst.

The Land-Rail arrives at Khartoum at considerable numbers in a weak and emaciated condition during the latter half of September, and is then often caught trying to obtain shelter in gardens, outbuildings, &c. The flights, however, soon pass on further south.

281. Porzana maruetta Linn.

I had four specimens of the Spotted Crake, caught alive by natives, brought to me at Khartoum in September 1904 and one in March 1905.

282. Limnocorax niger (Gm.).

I have seen the Black Rail from Kaka southwards on the White Nile, and on the Bahr-el-Ghazal and Jur Rivers. Sometimes, when I have been waiting for a shot at hippopotamuses, two or three of these Rails have come and chased each other about within a few feet of me. In the cover of the reeds they are rather noisy, constantly uttering a shrill cry. Mr. Middleton tells me that he once took one of these birds from the stomach of a Heron shot on the Bahr-el-Jebel.

283. Turnix lepurana (Smith).

Colonel Blewitt told me that a little Button-Quail was very abundant at Fashoda at the commencement of the rains, and that he had once shot as many as thirty couple there in one morning. I think that this must be the species.

284. Ortyxelus meiffreni (Vieill.).

a. ♂. Near El Obeid, March 24, 1904.

I first met with this most curious little Quail in May 1903 on the plateaux on each side of the Setit River, near the Abyssinian frontier, a locality from which it has not, I think, been previously recorded. I only saw it there, however, on three occasions.

In Kordofan it seemed tolerably abundant (March and April 1904) round El Obeid, thence past Jebel Abu Sinun to the Mazrub Wells, and in the waterless country west and south of them, where I came across it daily when looking for *Oryx leucoryx*, sometimes seeing a score or more in a morning's ramble. The birds were almost always in pairs, but did not appear to be breeding at the time. Dissection of the single male bird shot gave me the impression that they would have been nesting shortly. They probably lay their eggs at the commencement of the rains in May and June.

The country frequented by *Ortyxelus* is principally of red sand thinly studded with acacias, and everywhere covered with the detestable burr-bearing grass called by the Arabs "heskanit" (*Cenchrus catharticus*). A small thistle-like *Blepharis* (*B. linarifolia*) is also very abundant. The habits of the bird are most interesting. On the ground it appears to be a *Turnix* pure and simple, always concealing itself in grass-cover, through which it threads its way very rapidly, running in a crouching attitude. When hard pressed it crouches until almost trodden on, but as it rises all resemblance to a Quail ends. Springing up with none of the "whirr" that characterizes even the smallest game-birds, it flies in jerky undulations, often rising to a considerable height, and sometimes going a long distance before settling again—to all appearance a bob-tailed, broad-winged *Lark* and nothing else! In flight the white shoulder-patches are very noticeable.

I should say that the genus is rightly placed after *Turnix*, and not, as in the 'Catalogue of Birds,' near the Courier-Plovers, to which I can see only a faint resemblance in the shape of the head, and none whatever in habits, though Mr. Jackson has referred to it in his field-notes as the "Little Courser." Throughout my diaries it appears as the "Lark-Quail."

The crop of my specimen contained small grass-seeds only.

Further north, in Western Kordofan, Capt. H. N. Dunn obtained the bird at Jebel Haraza in the winter of 1902.

Spirit-specimens of *Ortyxelus* would be most welcome at the Natural History Museum, and would enable the affinities of the genus to be settled definitely. Unfortunately, seeing that the bird was plentiful, and not knowing that it was in such request, I shot only one example.

285. COTURNIX COMMUNIS (Bonn.).

Compared with its numbers in Egypt, the Quail can only be called a scarce winter-visitor to the Soudan. I met with it here and there wherever I travelled, but have never seen more than a few couple in a day, or a sufficient number to afford any shooting. I have noticed it in every month between September and May.

286. FRANCOLINUS CLAPPERTONI Childr.

a. ♂. Jebel Melbis, Kordofan, April 16, 1904.
b. ♂. " " " " "
c. ♀. " " " April 11, 1904.

This Francolin is the common "Partridge" of the Soudan. It is abundant on the Upper Atbara, the Gash near Kassala, the Setit, the Blue Nile and its tributaries, the White Nile, and in Kordofan. On the White Nile its range appears to overlap that of *F. gedgii*, a species that I have never come across, as the Francolins which I have shot on the Sobat and the Zeraf are identical with my more northern specimens.

287. Ptilopachys fuscus (Vieill.).

a–k. ♂♂ & ♀♀. Eleven specimens. Jebel Melbis, April 1904.

The only locality in which I have found the little Stone-Pheasant is the khor which runs from El Obeid to Jebel Melbis (Kordofan). Along this dry sandy nullah, which is fringed with large trees and thickets, the birds were numerous, but they did not appear to leave the immediate vicinity of the khor. They were almost invariably in small parties of from five to seven; they kept in very close company, and closely resembled diminutive bantam-hens, carrying their tails erect and in the same manner. They were very shy, and when approached scuttled off into the thickets with great rapidity. They seldom flew, except from the *other* side of a dense thicket, and all my specimens were obtained by running shots. They seemed silent birds, but once or twice when a party had been scattered by a couple of shots the survivors commenced a shrill little screaming cry. Their flesh is excellent.

Immature birds which I shot seemed to have been bred in the previous rains and were fully grown.

The Stone-Pheasant also occurs in the Bahr-el-Ghazal Province.

288. Numida ptilorhyncha Licht.

a. ♀. Jebel Alatarang, March 1901.

This Guinea-fowl is abundant—in places extraordinarily so—practically all over the Soudan wherever there is bush. I have not myself seen it north of the islands below the Sixth (Shabluka) Cataract, nor is it really plentiful until above Wad Medani on the Blue Nile and Jebel Ain on the White Nile.

In some parts of the country its numbers are astonishing. At times I have had hundreds and hundreds toddling away in front of me in one great blue-grey drove. Such large numbers were a perfect nuisance if I happened to be stalking big game, rising at every step with noise enough to ruin my chances of escaping detection, and many a stately Kudu bull still carries his coveted spiral horns through the African bush thanks to their timely warning.

They seem to breed in the rains, a time when travelling is difficult in the Soudan, and I have never found their nests.

289. Pterocles exustus (Temm.).

The most abundant Sand-Grouse in the Soudan. It occurs in the deserts of the northern part of the country in immense numbers, but in the dry season always remains within flying distance of the rivers. With its power of flight, however, this distance is very considerable—fifty miles at least, and probably much more. Desert-birds as they are, Sand-Grouse are great drinkers. During the rains, when pools of water are formed inland in the deserts, we see little of them, but throughout the dry weather they visit the rivers to drink every morning, coming week after week to the same spots, where shelving sand-banks make access to the water convenient for them. At this season they afford the best bird-shooting in the country, and at one of their chosen drinking-places, between 7.30 and 9 A.M. (according to the distance they have to travel), they come to the water in thousands. In twos and threes, in dozens and scores, in battalions of many hundreds, until the air is full of them, they come rushing from the desert, pitch at the water's edge, secure a hasty drink, and are off again with little or no delay. The flight may last for an hour or an hour and a half, after which not a bird will be seen in the neighbourhood until the next morning.

Many of these birds must traverse very great distances. West of Omdurman I have seen them crossing to the river when I was thirty-five miles from it, the return flight beginning to pass me little more than an hour later.

290. Pterocles senegalensis (Linn.).

a. ♂. Omdurman, Jan. 3, 1903.

The Spotted Sand-Grouse is a bird of the same distribution and habits as the last species, in company with which it visits the rivers daily to drink, but it is very much less abundant.

In any considerable "bag" of Sand-Grouse some examples of this species are always to be found, but among, perhaps, five hundred which I have at different times looked over I do not think that they amounted to more than five or six per cent.

291. PTEROCLES QUADRICINCTUS Temm.

a. ♂. R. Sobat, March 1, 1901.
b. ♀. R. Setit, May 1903.

This handsome Sand-Grouse seems to be entirely a bird of the black cotton-soil and thorn-scrub, and does not appear to occur on the sandy deserts at all. It does not range so far north as the other species, nor have I ever seen it in anything approaching the same quantities. It is, however, tolerably common in the bush on the White Nile, Sobat, and Bahr-el-Ghazal, and on the Blue Nile, Rahad, Dinder, Atbara, and Setit. It is generally met with among thorn-trees, in pairs or small parties. Unlike the other species, this bird goes in flights to the water at, or just after, sunset.

I found it breeding in fair numbers on the Dinder in March 1903. On the 19th, while tracking up a wounded bull buffalo, I came on a nest containing two tiny young in down—pretty little blackish-brown things marked with whitish lines. On the 20th I took a clutch of three fresh eggs, and on the 24th another clutch of three, slightly incubated.

It might be supposed that the pinkish colour of the eggs of this bird would render them conspicuous on the black cotton-soil on which they are laid. As a matter of fact, all that I saw were deposited among the scattered fallen leaves of a species of *Bauhinia* (Camel's Foot Tree) which dry to exactly the same clay-pink as the eggs, and among these leaves they are very difficult to detect.

Besides the species mentioned here I have seen, in the valleys among the Shabluka Hills, a Sand-Grouse which I think must be *Pterocles coronatus* Licht.

292. OTIS SENEGALENSIS Vieill.

a. ♂. Mazrub Wells, May 3, 1904.

This Bustard inhabits the red-sand country of Kordofan.

I first met with it halfway between El Duem and El Obeid, and thence west to the Mazrub Wells.

It is much noisier than the other Soudan Bustards, continually uttering at morning and evening a loud, harsh, grating call-note, which generally seems to come from much nearer quarters than where the bird really is. A gunshot will cause any individual within hearing to start calling at any time of the day. It seemed to me much warier and harder to secure than the little Black-bellied Bustard.

From a description in some MS. notes kindly lent me by Captain Cummins, R.A.M.C., I gather that he shot examples of this species near Goz Regeb on the Atbara. I have never seen it in cotton-soil districts.

293. Otis nuba Rüpp.

I have not met with this Bustard myself, but Capt. H. N. Dunn, R.A.M.C., shewed me the skin of one which he had shot near the Haraza Mountains, in Western Kordofan, and told me that in that locality it was common.

294. Lissotis lovati Grant.

a. ♂. Gedaref, May 24, 1901.
b. ♀. „ May 26, 1901.

All the Black-bellied Bustards which I have *shot* have belonged to this species. Mr. Hawker found this bird and *Lissotis hartlaubi* together on the White Nile, and possibly I have not distinguished between them on the wing, when their appearance must be almost identical.

This Bustard is almost always found in pairs. It does not generally fly very far when flushed, and can usually be walked up again if there is any cover, and killed without much trouble. The big *Eupodotis arabs* seldom settles again within sight when once flushed.

I have shot Lord Lovat's Bustard at Gedaref, at Gallabat, on the Blue Nile, White Nile, and Bahr-el-Ghazal. The stomach usually contains grasshoppers only.

The iris is yellowish brown, the eyelid purple; the bill dusky brown along the culmen, greenish at the base, and reddish brown at the sides; the legs and feet are dirty white.

On the waterless red-sand country of Western Kordofan —the home of *Oryx leucoryx* and *Gazella ruficollis*—I repeatedly flushed a Black-bellied Bustard, which I am inclined to think must have been *Lissotis melanogaster*. It was conspicuously darker than this species, with the wings almost entirely black and brown. On the same ground I shot a West-African antelope, *Damaliscus korrigum*.

295. EUPODOTIS ARABS (Linn.).

This is the common large Bustard of the Soudan, and more or less abundant throughout the country on suitable ground.

From Suakin on the east it extends right across to the west of Kordofan and the Bahr-el-Ghazal Province; I have seen it as far north as the junction of the Atbara with the Nile; I have met with it on the Sobat, but how far south it extends on the Bahr-el-Jebel I do not know.

It is, as a rule, very wary and difficult to approach, affording capital stalking with a rifle; occasionally, however, I have surprised it at close quarters in high cover, and had no difficulty in killing it with a shot-gun.

The following are the measurements of three specimens shot by me at Gedaref:—

	a (♀).	*b* (♂).	*c* (♂).
	in.	in.	in.
Length	35	42	39
Wing	20	25	25
Tail	10½	12	12½
Tarsus	6¼	8	7½
Bill at gape	3½	4	3¾
Expanse of wings	..	84	82

Iris golden orange, paler externally; *bill* yellowish white, dusky along the culmen; *orbital skin* yellowish white; *legs and feet* the same.

The male bird (*c*) weighed 18¼ lbs. The heaviest bird of which I have a note was shot at Suakin, and weighed 22 lbs.

Capt. Cummins, R.A.M.C., wrote to me from Kassala that the average weight of a cock bird was 15 or 16 lbs.

I once saw one of these Bustards roosting on a bush at nightfall. This is, I think, very unusual. It was on the plain between Gedaref and the Blue Nile, where jackals were numerous, which probably accounted for the circumstance. The next morning I met an old black carrying, slung on his camel, a Bustard with its head eaten off, and a jackal with its throat cut. The man had come upon the jackal when it had just killed the bird; he had stalked and knocked it over with a throwing-stick, and was looking forward to eating both!

Taken young these Bustards become very tame, evincing considerable affection for their owners and making delightful pets.

I have only once succeeded in finding an egg: it was on April 19th, at Um Muttra Meila.

These Bustards, though frequent and regular drinkers when near water, are often met with at great distances from it. Like so many other birds and animals in the Soudan, they seem capable of dispensing with water for a time, when necessary, without suffering much inconvenience. Probably, with their powers of flight, these abstinences are never very long.

Eupodotis kori Burch. I have never seen. It must be very scarce.

296. Balearica pavonina (Linn.).

The beautiful Crowned Crane is common—and in places very abundant—on both Niles and on their tributaries. I have not seen it north of the 16th degree of N. lat. It is a resident species, and appears to breed freely on the White Nile, but I have not myself seen its nest. The native name "Garnook" is an apt imitation of the bird's loud trumpet-like call. These Cranes are favourite garden-pets in the Soudan, and can generally be purchased in Omdurman. In a wild state they seem singularly fearless of crocodiles; I have often seen them standing on a sand-bank all round the sleeping monsters, and I once watched one through glasses pecking something from a ten-foot crocodile's armoured hide.

The drawings of this graceful bird by Sir Harry Johnston are excellent, its characteristic attitudes being admirably caught.

The following is a description of a young bird which had just left the nest (Feb. 20th, 1904):—

Head rufous to fulvous, the cheeks paler, the chin and throat palest; crest rufous to fulvous, the feathers soft and scanty, about 1¾ inch long. The feathers of the neck broadly tipped with rufous, their bases being black on the upper neck only. Feathers of the back broadly, and those of the lower surface more narrowly, edged with fulvous; median secondary wing-coverts white tinged with rufous, and with one black bar; tertiary coverts rufous with several broad black bars. Thighs pale fulvous. No wattles on the face. Iris greyish brown, with an outer ring of pale grey.

297. GRUS COMMUNIS Bechst.

Grey Cranes winter in the Soudan in great numbers. I have seen them as early as September 7th, and as late as the middle of May. Between these months their long lines and V-formations passing over Khartoum are a familiar sight.

Their chief resorts are the cotton-soil plains on which dhurra is cultivated, or the sand-banks and mud-flats in the rivers. Occasionally I have seen upwards of a thousand together.

298. GRUS VIRGO (Linn.).

The Demoiselle Crane, though abundant in the cold weather, is much less plentiful than the Grey Crane. Otherwise the same remarks apply to it.

299. PHYLLOPEZUS AFRICANUS (Gm.).

a. ♂. Meshra-el-Rek, March 8, 1902.

The White-faced Jacana is a common bird on the swampy parts of the White Nile and its affluents. As the "sudd" is reached it becomes extremely abundant. At Meshra-el-Rek I noticed it feeding tamely among domestic fowls at the muddy landing-place.

300. LOBIVANELLUS SENEGALUS (Linn.).

The Yellow-wattled Lapwing seems to be scarce. I saw three pairs, which were remarkably tame, about the little station of Meshra-el-Rek in March 1902, and I have occasionally seen it at Khartoum and on the White Nile. I also know of its occurrence as far east as Kassala.

301. **Sarciophorus tectus** (Bodd.).

a. ♀. River Rahad, April 5, 1901.

The Red-wattled Lapwing is a much commoner bird than the last, but nowhere plentiful. I have generally come across it on dry rising ground about villages, to the vicinity of which it is very partial. It does not seem to seek its food in the neighbourhood of water, like the Spur-winged Plover, and is altogether more of a dry-land bird.

It is generally distributed on the Blue Nile and its tributaries, and east as far as Kassala, but is rare on the White Nile.

302. **Hoplopterus spinosus** (Linn.).

The Spur-winged Plover is abundant throughout the country where there is water, away from which it is never met with. Its food seems to consist chiefly of small coleoptera.

I once saw a pair of these birds pecking something from a basking crocodile's head.

I found it breeding on the Rahad River in April 1903, and took nests containing a single egg on the 10th and 11th, and two eggs on the 15th. About the same time Mr. W. G. Percival told me that he had found numerous nests on small islets opposite the mouth of the Atbara. The tiniest islands are often chosen by this bird to lay its eggs on—a rock ten feet in diameter is large enough. I can hardly imagine that the young remain in this area until able to fly, and suspect that both this species and *Œdicnemus senegalensis* carry their chicks off the islands on which they are hatched, after the manner of a Woodcock.

303. **Vanellus leucurus** (Licht.).

a. ♀. Khartoum, Feb. 3, 1903.

b. ♀. „ Feb. 4, 1903.

Small parties of the White-tailed Lapwing are almost always to be found in winter frequenting the islands just above the junction of the White and Blue Niles at

Khartoum. Its alarm-note is a short sharp "quit! quit! quit!"

304. VANELLUS GREGARIUS Pall.

a. ♀. Khartoum, Feb. 21, 1903.

I can only find a single note of having come across the Sociable Lapwing. I killed one of a pair which were feeding together on some newly-ploughed land at Khartoum in February 1903. It was in immature plumage, with buff superciliary circlet, grey arrow-head markings on the breast, and some chesnut feathers on the lower surface.

305. CHARADRIUS ASIATICUS Pall.

a. ♀. Khartoum, Nov. 7, 1902.
b. ♂. „ Dec. 4, 1902.
c. ♀. „ .. „

The little Caspian Plover is abundant at Khartoum and on the White Nile during the winter, frequenting cultivated land or sandy desert near the river. Flocks generally feed in very open company, but unite at once when disturbed, and are then wild and difficult to approach again. They are fond of searching for insect-food among garbage and carrion.

306. ÆGIALITIS HIATICOLA (Linn.).

307. ÆGIALITIS DUBIA (Scop.).

a. ♂. Khartoum, Dec. 3, 1902.
b. ♂. „ Feb. 21, 1903.

Both these Ringed Plovers are abundant cold-season migrants.

308. STREPSILAS INTERPRES Linn.

The Turnstone is not uncommon on the White Nile in the winter.

309. TRINGA SUBARQUATA (Güld.).

The Curlew-Sandpiper is very common in the winter. It lingers here till the end of May or beginning of June, assuming its full breeding-plumage before departure.

310. TRINGA MINUTA Leisler.

a. ♀. Khartoum, Feb. 20, 1903.

The Little Stint is another very abundant winter-visitor.

311. Pavoncella pugnax (Linn.).

a. ♂. Khartoum, Dec. 1902.

b. ♀. Duem, Nov. 16, 1902.

The Ruff is abundant in winter. It is largely a grain-eater, frequenting the dhurra-fields at harvest-time in flocks. It is also attracted to the vicinity of garbage and carrion in search of insect-food. Ruffs are excellent eating, and afford pretty shooting, being quite wild enough to give sport.

In captivity they become very tame, and spend all their time in ruffling up to each other and fighting. This is in the winter and in their winter plumage.

They remain until March, but I have never seen them begin to acquire the ruff here.

312. Limosa ægocephala (Linn.).

The Black-tailed Godwit is abundant in the winter, and remains until late in the spring.

313. Totanus calidris (Linn.).

The Redshank is tolerably plentiful in the winter.

314. Totanus canescens (Gm.).

a. ♀. Khartoum, Dec. 5, 1902.

The same remark applies to the Greenshank.

315. Totanus stagnatilis Bechst.

316. Totanus glareola (Linn.).

317. Totanus ochropus (Linn.).

The Marsh-, Wood-, and Green Sandpipers are all tolerably common in the winter.

318. Totanus hypoleucus (Linn.).

The Common Sandpiper is met with wherever there is water. It is tame and lively in captivity, feeding freely on chopped meat, fish, eggs, and breadcrumbs.

319. Numenius arquata (Linn.).

320. Numenius phæopus (Linn.).

Curlews and Whimbrels are both fairly common in the winter and spring, the latter birds being the most plentiful.

321. Gallinago cœlestis (Frenz.).

The Snipe arrives in the Soudan towards the end of September, and remains until the end of March. During these months two or three couple can generally be picked up along the White Nile at Khartoum, but they are seldom plentiful. Indeed I have not found them abundant anywhere in the country. I have seen them in small numbers in the swamps of the Bahr-el-Ghazal, but the grass in the marshes there is too high and rank to suit them, and throughout the Soudan there is, as yet, very little land under irrigation where they could settle down for the winter.

The Jack-Snipe (*G. gallinula*), of which Mr. Hawker killed one specimen at Fashoda in April 1900, I have never seen.

322. Rhynchæa capensis (Linn.).

I have flushed the Painted Snipe once or twice in September on the marshy ground at the edge of the White Nile at Khartoum. So far as my experience goes, it is a scarce bird in the Soudan.

323. Recurvirostra avocetta Linn.

The Avocet seems scarce in this part of the world. I have only seen small parties on a few occasions.

324. Himantopus candidus Bonn.

The Black-winged Stilt is plentiful, and may be met with at almost any time of the year.

325. Œdicnemus senegalensis Swains.

a. ♂. Blue Nile, June 12, 1901.

The Senegal Thick-knee seems to occur on all the Soudanese rivers south of the Atbara. East and west I have seen it on the Setit and as far as Meshra-el-Rek on the Bahr-el-Ghazal. Though a common bird it is usually met with in small numbers—a few pairs or parties of three or four in close proximity being the rule.

I have taken its eggs on three or four occasions on the Rahad, in April. Two appear to be the number ordinarily laid.

Mr. W. G. Percival, of the Agricultural and Lands Department, tells me that he has seen eggs in the same month on small islets opposite the mouth of the Atbara.

I once found a nest of this bird on a rock not more than two feet in diameter and surrounded by deep water. The eggs of the Spur-winged Plover, too, may often be found on the tiniest of islets. It seems to me unlikely that the chicks of these species can remain in such places for more than a day or two, and I imagine that the old birds must carry them across to the mainland at a very early age.

In Kordofan, when stalking *Oryx leucoryx* west of Mazrub, I have several times flushed a very dark-coloured *Œdicnemus* in the sandy bush-country. I never secured a specimen, and do not know what species it is.

326. Pluvianus ægyptius (Linn.).

a. ♂. Blue Nile, April 2, 1901.

The charming little Egyptian Plover is common all along the rivers of the Soudan wherever there are sand-banks. It is, as might be expected, absent from the regions of swamp and sudd.

Though very seldom leaving the margin of the river, it will sometimes take to frequenting a native village a few hundred yards inland. It then becomes more than usually fearless, tripping about the open spaces and "zaribas" among the tethered goats, or standing on the roofs of the mud-buildings within a few feet of a passer by.

In the winter it may be found in flocks of up to twenty, but pairs are, I think, commoner all the year round.

Its eggs are extremely difficult to find, and I have only once succeeded in obtaining them. This was on the Rahad River, April 10th, 1903. I found the nest under the following circumstances:—On the 9th I was fishing in a rocky pool. Opposite me was a sand-bank on which a pair of these Plovers was running about rather aimlessly. Presently I noticed one of them sit down on the sand. For nearly an hour I continued fishing and the bird did not move;

therefore, thinking there might be eggs underneath her, I walked round the pool, but when I got there the bird had gone, and there was nothing to mark the exact place. I raked up the sand with my fingers for some time at what I thought was the right spot, but could find nothing. Next morning I was again fishing at the same pool, and again the *Pluvianus* came and sat in exactly the same place. This time, to avoid having to take my eyes off her, I waded across the pool; she rose to her feet and ran off as I approached, and this time I felt the two eggs, under about an inch of sand, at the first attempt. This bird was sitting *on the sand above her eggs*, probably to keep the extreme heat of the sun off them. Neither in sitting down or rising did she scratch in the sand to expose or to re-bury them. This was about noon, and the heat on the sand was tremendous. There was no disturbance whatever of the surface to indicate the presence of the eggs beneath, and absolutely accurate locating from a distance was essential to finding them.

327. CURSORIUS GALLICUS (Gm.).

a. ♀. Khartoum, Nov. 27, 1902.
b. ♂. ,, Jan. 30, 1903.
c. ♂. ,, ,,
d. ♂. ,, ,,

The Cream-coloured Courser is tolerably abundant on the deserts of the Northern and North-Western Soudan.

328. RHINOPTILUS CHALCOPTERUS (Temm.).

Capt. H. N. Dunn, R.A.M.C., shewed me the skin of a specimen which he had shot at Roseires. I have not myself met with the bird.

I have since seen an example recently killed at Gondokoro.

329. GLAREOLA PRATINCOLA (Linn.).

a. o. Khartoum, Feb. 22, 1903.
b. o. ,, Jan. 1903.

Pratincoles are abundant, and are met with in pairs, small parties, or large flocks. Their habit of rising spirally in a column has been well described by Mr. Hawker. In the spring they may be seen in large numbers at Khartoum, hawking gracefully over the bean-fields of the natives.

330. Struthio camelus Linn.

The Ostrich is widely distributed through the country. I have seen it on the Setit, on the Dinder, on the White Nile and Bahr-el-Ghazal, and in Kordofan.

The shooting of Ostriches for sport is now entirely prohibited in the Soudan.

XXV.—*Notes on the Parrots.* (Part I.)

By T. Salvadori, H.M.B.O.U.

Thirteen years have elapsed since the publication of the twentieth volume of the 'Catalogue of Birds in the British Museum,' which contained the Order Psittaci or Parrots, and not much of a definite kind has been done since as regards the classification of the group, though many new species have been described and not a few obscure forms have been made clear. I have therefore thought it not useless to prepare a sort of Appendix to my previous work, in order to bring up to date our knowledge of the group.

As regards the general classification of the Parrots, some attempts have been made since the publication of the Catalogue, but I do not think that any of them are better than mine.

Messrs. Beddard and Parsons in 1893 published a paper, "On certain Points in the Anatomy of Parrots bearing on their Classification"*. They had studied the syrinx and the myology of the group, but it appeared from their remarks that they were not prepared to produce a complete scheme of classification of the Psittaci. A point, strange to say, on which they seem to have been more decided, is that *Stringops* does not deserve the high rank of the representative of a family!

Prof. Newton (1894), in the 'Dictionary of Birds'

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* Proc. Zool. Soc. Lond. 1893, pp. 507-514, pl. xli.

(pp. 684–691), seems to accept five of the families admitted in my work—*Nestoridæ, Stringopidæ,* and *Psittacidæ* without doubt, and *Cacatuidæ* and *Loriidæ* as probably justifiable—while he says that exception may be taken to the *Cyclopsittacidæ.* When we know something about the structure of the tongue of the *Cyclopsittacidæ* we shall better understand the value of that group.

Dr. Mivart, in 1895, published a paper on the hyoid bone of certain Parrots*, describing its peculiarities in different species (*Psittacus erithacus, Lorius domicella, Lorius flavo-palliatus, Eos reticulata, E. indica, Trichoglossus ornatus,* and *Stringops habroptilus*), and shewing that the first and last species have characters which prove that they severally belong to different families, while the other species belong to a third family.

In two other papers, published in 1895, bearing on "The Skeleton of *Lorius flavo-palliatus* (taken as the type of the *Loriidæ*) compared with that of *Psittacus erithacus*" (type of the family *Psittacidæ*) †, Dr. Mivart has shown the many differences these species present, and has exhaustively proved the value of the family *Loriidæ*.

In a subsequent paper, published by Dr. Mivart in 1896, "On the Hyoid Bones of *Nestor meridionalis* and *Nanodes discolor*"‡, the right of the family *Nestoridæ* to stand is equally demonstrated.

Dr. Forbes and Mr. Robinson in 1897 §, and Dr. Sharpe in 1900 ||, have entirely followed my arrangement of the Parrots; the same has been done by Sclater in 1902 ¶; while Dr. Dubois in 1899**, in accepting my six families, has

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* Proc. Zool. Soc. Lond. 1895, pp. 162–174.

† T. c. pp. 312–337, 363–399.

‡ Op. cit. 1896, pp. 236–240.

§ Catalogue of Parrots in the Derby Museum (Bull. Liverp. Mus. i. pp. 5–22).

|| Hand-list of the Genera and Species of Birds, vol. ii.

¶ "List of the Parrots represented in the Society's Collection in January 1902, with remarks on some of the rarer species" (Proc. Zool. Soc. Lond. 1902, pp. 166–171).

** Synopsis Avium—Nouveau Manuel d'Ornithologie, fasc. i. pp. 1–34.

placed them in a different sequence, which is no improvement, I think.

Dr. Shufeldt, in 1902 *, published a paper on "Osteology of the Psittaci," repeating what he had written in a previous paper about the osteology of the Carolina Paroquet, and adding some notes about the osteology of the Owl-Parrot. He gives no conclusions as regards the divisions of the Order, but only expresses the opinion that the Parrots may be the next of kin to the Owls.

Mr. Mudge, in 1902 †, attempted a classification of the Parrots based on the structure of the tongue, taking into consideration the lingual myology and osteology, and came to the conclusion that he could admit only three families—*Loriidæ, Nestoridæ,* and *Psittacidæ.* I cannot help thinking that if Mr. Mudge had not confined himself to the study of the tongue, but had investigated other organs, he would have found sufficient characters to separate from the *Psittacidæ* the *Cacatuidæ,* the *Stringopidæ,* and even the *Cyclopsittacidæ.* One thing is certain, that the arrangement proposed by Mr. Mudge is the most unnatural grouping which can be imagined by an ornithologist. To prove this statement it will be enough to say that *Psittacula* is united with *Cyanorhamphus* and *Nymphicus, Pyrrhulopsis* with *Caica,* and *Loriculus* with *Pyrrhura,* while *Psephotus* is joined to *Conurus* and *Palæornis* and separated from *Platycercus. Ara* is separated from *Conurus,* and *Stringops* and *Nasiterna* are united with *Cacatua, Microglossus, Calopsittacus,* and *Calyptorhynchus.* Mr. Mudge seems not to have realized how much his arrangement of the *Psittacidæ* disagrees with the geographical distribution of the genera.

As regards the study of single families and groups, systematically and geographically, some good work has been done since 1891.

One family, the *Loriidæ,* has been treated monographically by Mivart [*], with good illustrations by Mr. Keulemans; but there is not much new in the text, Mivart not having been a specialist on the group.

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* Ann. of the Carnegie Mus. i. pp. 399–421.

† "On the Myology of the Tongue of Parrots, with a Classification of the Order, based upon the Structure of the Tongue" (Trans. Zool. Soc. Lond. xvi. pp. 211–278, pls. xxvi.–xxix.).

Mr. W. Rothschild and Dr. Hartert have given us some excellent notes on the Papuan species of Parrots [†], and Dr. Reichenow has treated the African species in a masterly way [‡].

Dr. Hartert has published a paper "On the Genus *Psittacella*" ('Ibis,' 1897, pp. 58–60, pl. iii.) and Dr. Martorelli another, "On the Variations of a Lory (*Eos fuscata*), as exhibited by specimens in the Turati Collection" ('Ibis,' 1897, pp. 61–63).

I may mention here that I have had the opportunity of specially studying the genus *Pyrrhura*, and have added to it four species, three that are new ('Ibis,' 1900, pp. 667–674, pl. xiv.) and a fourth previously insufficiently known.

Last of all, Mr. Seth Smith, in 1903, published a work with the following title: 'Parrakeets; being a Practical Hand-book to those Species kept in Captivity.' I have not had the advantage of seeing this work, but I suppose that it is of a popular nature.

I will now proceed with my additional notes in systematic order.

Fam. I. NESTORIDÆ (Cat. Birds Brit. Mus. xx. p. 4.)

NESTOR SEPTENTRIONALIS Lorenz, Verh. z.-b. Ges. Wien, 1896, p. 198 (North Isl.); Sharpe, Hand-list, ii. p. 1, sp. 3 (1900); Dubois, Syn. Av. p. 1054 (fasc. xiv. 1903).

The original description of this species runs as follows:—

> N. SEPTENTRIONALIS. *Nestori meridionali* Gmelin similis, sed minor; vertice fusco (nec cano): remigibus secundariis et tectricibus alæ fuscis vix florescentibus (*sic*) (nec cyaneo-viridibus); cauda fusca, ad basin colore flavo lavata (non viridescens).

Hab. North Isl., New Zealand.

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[*] A Monograph of the Lories, or Brush-tongued Parrots, composing the Family Loriidæ. Pp. i–liii, 1–193, pls. lxi. Folio, London, 1895.

[†] Nov. Zool. viii. pp. 64–88 (1901).

[‡] Die Vögel Afrikas, vol. ii. pp. 1–25.

I have never seen an example of *N. septentrionalis*, but Dr. Hartert informs me that in the Tring Museum there are four specimens from the North Island sufficiently distinct from the South-Island bird. Still it appears that it is not always easy to perceive the difference if single specimens only are compared. The specific value of *N. septentrionalis* is, in my opinion, open to question.

NESTOR ESSLINGI Souancé (Cat. B. xx. p. 8).

The value of *N. esslingi* as a species also appears questionable.

NESTOR NORFOLCENSIS Pelz. (Cat. B. xx. p. 10); Lorenz, Verh. z.-b. Ges. Wien, 1896, p. 199; Forbes & Robinson, Bull. Liverp. Mus. i. p. 5, pl. i. (1897).

First Dr. Lorenz, then Dr. Forbes and Mr. Robinson (*ll. cc.*), have expressed some doubt as to *N. norfolcensis* being different from *N. productus*; but as the two birds inhabit two different islands, I should say that they would probably be separable.

NESTOR PRODUCTUS Gould; Tristr. Ibis, 1892, p. 557; Lorenz, Verh. z.-b. Ges. Wien, 1896, p. 199; Sclat. Ibis, 1896, p. 590; Orn. Monatsb. v. p. 9 (1897).

Canon Tristram mentions specimens of this bird, now extinct, in the Norwich, Cambridge, and Liverpool (Derby) Museums; Dr. Sclater has inspected one in the Göttingen Museum, and another is stated to be in the Museum at Birmingham.

Fam. II. LORIIDÆ (op. cit. p. 18).

Many additions have been made to this family since the publication of the 'Catalogue,' but only a few forms can stand as really distinct species, and many of them are scarcely of the rank of subspecies.

The family has been the subject of an illustrated monograph by Dr. Mivart, who has figured several species for the first time, but the most important additional information relating to it is that published by Mr. Rothschild and Dr. Hartert.

CHALCOPSITTACUS Bp.

CHALCOPSITTACUS ATER (Scop.); Mivart, Mon. Lor. pl. i. fig. 1 (1896).

Chalcopsittacus ater ater Rothsch. & Hartert, Nov. Zool. viii. p. 64 (1901).

CHALCOPSITTACUS BERNSTEINI (Rosenb.); Mivart, Mon. Lor. pl. i. fig. 2 (1896).

Chalcopsittacus ater bernsteini Rothsch. & Hartert, Nov. Zool. viii. p. 64 (1901).

Besides the dark-red tibiæ and the edge of the forehead tinged with the same colour, Rothschild and Hartert call attention to another character of this species, namely, the red patch on the inner web of the primaries, although it is not present in every specimen.

CHALCOPSITTACUS INSIGNIS Oust.; Mivart, Mon. Lor. pl. ii. (1896).

This bird, which is confined to Ambernon Island, in Geelvink Bay, has not been met with again *.

Dr. Mivart's plate is not a very faithful representation of the bird; at least one of the types of *C. bruijnii* preserved in the Museum of Turin differs in having the anterior and upper parts of the cheeks more extensively red, the black part of the feathers of the lower parts with a purple gloss, and the tail not so greenish round the tip and not so bright yellow at the tip underneath; besides, the concealed parts of the tail-feathers shew on the inner web a well-defined bright red patch.

CHALCOPSITTACUS STAVORINI (Less.).

Concerning this long-lost species no additional information has come to hand.

CHALCOPSITTACUS DUYVENBODEI Dubois; Rothsch. Nov. Zool. i. p. 677 (1894); Mivart, Mon. Lor. pl. iii. (1896); Dubois, Syn. Av. p. 28, n. 356 (fasc. i. 1899); Sharpe, Hand-list, ii. p. 2 (1900); Rothsch. & Hartert, Nov. Zool. viii. p. 65 (1901).

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* Since this remark was written, Dr. Hartert has informed me that the Tring Museum has received specimens of this rare bird from a plumassier in London.

Hab. North coast of New Guinea from Takar (*Doherty*) to Stephansort (*Capt. Cotton & Webster*) in Kaiser-Wilhelm's Land.

The exact habitat of this bird has been discovered since the publication of the Catalogue.

CHALCOPSITTACUS SCINTILLATUS (Temm.); Mivart, Mon. Lor. pl. iv. figs. 1, 3 (1896).

Chalcopsittacus scintillatus scintillatus Rothsch. & Hartert, Nov. Zool. viii. p. 64 (1901).

CHALCOPSITTACUS CHLOROPTERUS Salvad.; Mivart, Mon. Lor. pl. iv. fig. 2 (1896).

Chalcopsittacus scintillatus chloropterus Rothsch. & Hartert, Nov. Zool. viii. p. 65 (1901).

Eos Wagl.

EOS CYANOGENYS Bp.; Mivart, Mon. Lor. p. 19, pl. v. (1896).

Eos cyanogenia Bp.; Rothsch. & Hartert, Nov. Zool. viii. p. 65 (1901).

Dr. Mivart makes me say that Finsch's *Domicella schlegeli* was established on a young bird of this species. This is a mistake. I said (P. Z. S. 1878, p. 86) that it was the young of *E. rubra*.

EOS RETICULATA (S. Müll.); Mivart, Mon. Lor. pl. vi. (1896); Hartert, Nov. Zool. vii. p. 19 (Dammer and Little Key I.) (1900); viii. p. 5 (Toeal, Little Key) (1901), p. 165 (Tenimber I. only) (1901); Finsch, Notes Leyd. Mus. xxii. p. 285 (Babber) (1901).

This bird inhabits only the Tenimber Islands. The specimens sent by Mr. Kühn to the Tring Museum from Dammer, in the Banda Sea, and from Toeal, Little Key, appear, from his later statements, to have been introduced both at Toeal and Dammer.

EOS HISTRIO (P. L. S. Müll.); Mivart, Mon. Lor. pl. vii. figs. 1–3 (1896).

Eos talautensis Meyer & Wiglesw.

Eos histrio part., Salvad. Cat. Birds Brit. Mus. xx. p. 21, spec. *g*, Saha I. (Talaut Isl.) (1891).

Eos histrio talautensis Meyer & Wiglesw. Journ. f. Orn. 1894, p. 240; Hartert, Nov. Zool. v. p. 88 (1898).

Eos histrio var. *talautensis* Mivart, Mon. Lor. p. 24A (1896); Dubois, Syn. Av. p. 28 (1899).

Eos talautensis Sharpe, Hand-list, ii. p. 2, n. 4 (1900).

According to Dr. Meyer and Mr. Wiglesworth, the Talaut Lory differs from *E. histrio* in having the upper wing-coverts almost entirely red, with scarcely any mixture of black, and the black band at the tip of the secondaries narrower (2–5 mm. broad, instead of 7–12 mm.).

The difference appears to be very small; still Dr. Hartert declares that he has had no difficulty in distinguishing every one of the series from the typical *E. histrio*.

Hab. Talaut Islands.

Eos challengeri Salvad.; Mivart, Mon. Lor. pl. vii. fig. 2 (1896).

Dr. Mivart is not inclined to give to this species a higher rank than that of a variety or subspecies.

Eos cardinalis (G. R. Gr.); Mivart, Mon. Lor. pl. viii. (1896); Rothsch. & Hartert, Nov. Zool. viii. p. 186 (Florida, Kulambangra), p. 378 (Guadalcanar) (1901); ix. p. 588 (Ysabel), p. 594 (Treasury I.) (1902).

Eos rubra (Gm.); Mivart, Mon. Lor. pl. ix. (1896); Sharpe, Hand-list, ii. p. 2 (1900).

Eos kuhni Rothsch. Nov. Zool. v. pp. 110, 509 (=*E. rubra* juv. from Ké Islands) (1898).

Eos bornea (L.); Rothsch. Nov. Zool. v. p. 509 (1898); Hartert, Nov. Zool. viii. p. 4 (Key I.) (1901).

Eos borneus (L.); Rothsch. Nov. Zool. viii. pl. xviii. fig. 1 (juv.) (1898).

Eos bornea bornea Hartert, Nov. Zool. vii. p. 229 (1900); viii. p. 5 (1901).

Whether the Ké-Island bird, which is decidedly larger than those from Amboina and Ceram, deserves specific distinction is still uncertain.

Eos CYANONOTA (Vieill.).

Psittacus cyanonotus Vieill. Nouv. Dict. xxv. p. 334 (1817) (*ex* Levaill. pl. 93).

Eos rubra part., Salvad. Cat. Birds Brit. Mus. xx. p. 23 (1891).

Eos bornea (!) *cyanonotus* Hartert, Nov. Zool. vii. pp. 228, 229 (1900); viii. p. 5 (1901).

All authors who have treated of *E. rubra* (Wallace, Schlegel, Finsch, and myself, Orn. Pap. e Mol. i. pp. 253–254) have noticed that the Buru birds are somewhat smaller and of a deeper red. Dr. Hartert considers the differences as of subspecific value.

Eos SEMILARVATA Bp.; Mivart, Mon. Lor. pl. x. (1896).

The habitat of this rare species is still unknown.

Eos WALLACEI Finsch; Mivart, Mon. Lor. pl. xi. (1896).

Eos INSULARIS Guillem.; Mivart, Mon. Lor. pl. xii. (1896).

Eos RICINIATA (Bechst.); Mivart, Mon. Lor. pl. xiii. (1896).

Eos variegata (Gm.); Sharpe, Hand-list, ii. p. 2, n. 11 (1900).

Eos riciniatus Hartert, Nov. Zool. x. p. 46 (Batjan) (1903).

The preference for the name *E. variegata* (Gm.), advocated by Mr. Rothschild, does not seem to me to be fully justified; it appears that Dr. Hartert has arrived at the same conclusion.

Eos OBIENSIS Rothsch.

Lorius riciniatus part., Schleg. Mus. P.-B. *Revue*, p. 57 (Obi Major) (1874).

Eos riciniata part., Salvad. Orn. Pap. e Mol. i. p. 263 (Obi) (1880); Guillem. P. Z. S. 1885, p. 564 (part., specim. *r*, Obi Major); Salvad. Cat. B. xx. p. 28 (part., Obi) (1891).

Eos variegata obiensis Rothsch. Bull. B. O. C. x. p. xvi (1899).

Eos obiensis Sharpe, Hand-list, ii. p. 2, n. 12 (1900).

Eos riciniatus obiensis Hartert, Nov. Zool. x. p. 5 (1903).

From Mr. Rothschild's description, it appears that adult examples of this species have no purple occiput or purple collar round the neck, and all the greater wing-coverts and scapulars black; while other individuals, probably younger, exhibit a wide collar and a purple patch on the occiput, the latter, however, not being connected with the collar. These individuals, according to Mr. Rothschild, can only be distinguished from typical *E. variegata* (=*riciniata*) by the greater extent of the black colour on the wings.

Hab. Obi Major.

Dr. Hartert confirms the characters pointed out by Mr. Rothschild; but he adds that younger individuals may be sometimes indistinguishable from Batjan, Halmahera, and Ternate specimens (=*E. riciniata*).

Eos RUBIGINOSA (Bp.); Mivart, Mon. Lor. pl. xiv. (1896).

Eos FUSCATA Blyth; Mivart, Mon. Lor. pl. xv. (1896); Martorelli, Ibis, 1897, pp. 60–63; Rothsch. & Hartert, Nov. Zool. viii. p. 65 (1901).

It appears that this bird is dimorphic, there being a red and a yellow form; it follows that the yellow marks are not characteristic of the female, as stated in the 'Catalogue of Birds,' xx. p. 31.

LORIUS Vig.

LORIUS HYPŒNOCHROUS G. R. Gr.; Mivart, Mon. Lor. pl. xvi. (1896); Hartert, Nov. Zool. v. p. 530 (1898).

Lorius hypœnochrous hypœnochrous Rothsch. & Hartert, Nov. Zool. viii. p. 66 (1901).

Dr. Hartert would restrict the habitat of this species to the Louisiade group (Rossell and Sudest Islands).

LORIUS DEVITTATUS Hartert.

Lorius hypœnochrous part., Salvad. Cat. Birds Brit. Mus. xx. p. 32 (1891).

Lorius hypœnochrous devittatus Hartert, Nov. Zool. v. p. 530 (1898); Rothsch. & Hartert, op. cit. viii. p. 66 (1901).

Lorius devittatus Sharpe, Hand-list, ii. p. 3, no. 2 (1900).

According to Dr. Hartert, this form differs from typical

L. hypœnochrous in lacking the black bar at the tip of the longer wing-coverts.

Hab. Fergusson I. (type), Woodlark I., New Britain, New Ireland, New Hanover, and the low country of S.E. New Guinea.

This form appears to me very doubtful, especially as the birds of St. Aignan are intermediate between *L. hypœnochrous* and *L. devittatus*, "having an indication of a black bar, some of the outermost [longer] under wing-coverts being blackish" (*Hartert*). In the allied species *L. lory* the black band at the tip of the longer under wing-coverts is a sign of immaturity.

Lorius lory (Linn.); Mivart, Mon. Lor. pl. xvii. fig. 1 (1896).

Lorius lory lory Rothsch. & Hartert, Nov. Zool. viii. p. 66 (1901).

Lorius lory subsp. major Rothsch. & Hartert.

Lorius lory, part., Guillem. P. Z. S. 1885, p. 621 (Waigiou); Salvad. Cat. B. Brit. Mus. xx. p. 33 (Waigiou).

Lorius lory major Rothsch. & Hartert, Nov. Zool. viii. p. 66 (Waigiou) (1901).

Similar to *L. lory* and scarcely different, only having the wing somewhat longer (not shorter, as by mistake has been stated by the authors of the subspecies); wing 167–175 and even 179 mm., against 160 to 165 and even 168 mm. in typical *L. lory*.

Hab. Waigiou.

Lorius erythrothorax Salvad.; Mivart, Mon. Lor. pl. xviii. fig. 2 (1896).

Lorius erythrothorax rubiensis Meyer, Abh. Mus. Dresd. 1892–93, no. 3, p. 10 (1893).

Lorius rubiensis Sharpe, Hand-list, ii. p. 3, no. 5 (1900).

Lorius lory erythrothorax Rothsch. & Hartert, Nov. Zool. viii. p. 66 (1901).

Hab. New Guinea, except the northern peninsula, and perhaps also the eastern part.

In the Tring Museum there are specimens of this species from Kapaur, from Etna and Triton Bays, from Ron Island in the southern part of Geelvink Bay, from British New Guinea, and from Kaiser Wilhelm's Land.

LORIUS JOBIENSIS (Meyer); Mivart, Mon. Lor. pl. xviii. fig. 1 (1896).

Lorius lory jobiensis Rothsch. & Hartert, Nov. Zool. viii. p. 67 (1901).

Lorius lory, subsp.?, Rothsch. & Hartert, ibid. p. 67 (Takar) (1901).

It appears to me that specimens from Takar, which only differ from those of Jobie in having a shorter wing (160 mm. against 175 mm.), cannot be separated from *L. jobiensis*; it is a well-known fact that many species of Jobie Island extend to the northern coast of New Guinea, east of Geelvink Bay.

LORIUS SALVADORII Meyer; Mivart, Mon. Lor. pl. xix. (1896).

Lorius lory salvadorii Rothsch. & Hartert, Nov. Zool. viii. p. 67 (1901).

"This form differs from *L. jobiensis* mainly in its much smaller size, especially as regards the bill and wings; the latter measuring only about 160 mm. Besides the smaller size, the red of the breast is somewhat more scarlet, without a rosy tinge; the hind-neck and upper back are deeper, almost black; the upper abdomen is also generally darker, the under tail-coverts generally, but not always, deeper blue. The smaller size is the most constant character of this form."

Hab. "Common near Konstantinhafen and Astrolabe Bay in German New Guinea" (*R. & H.*).

LORIUS CYANAUCHEN (S. Müll.); Mivart, Mon. Lor. pl. xx. (1896).

Lorius lory cyanauchen Rothsch. & Hartert, Nov. Zool. viii. p. 67 (1901).

LORIUS DOMICELLA (Linn.); Mivart, Mon. Lor. pl. xxi. (1896).

LORIUS CHLOROCERCUS Gould; Mivart, Mon. Lor. pl. xxii. (1896).

Lorius tibialis Sclat.; Mivart, Mon. Lor. pl. xxii. (1896). The habitat of this species is still unknown.

Lorius garrulus (Linn.); Mivart, Mon. Lor. pl. xxiv. fig. 1 (1896).

Lorius flavopalliatus Salvad.; Mivart, Mon. Lor. pl. xxiv. fig. 2 (1896).

Lorius garrulus flavopalliatus Hartert, Nov. Zool. x. pp. 4, 46 (1903).

Calliptilus Sund.

Calliptilus solitarius (Lath.); Mivart, Mon. Lor. pl. xxv. (1896).

Vinia Less.

Vinia (nomen emend.) Sharpe, Hand-list, ii. p. 4 (1900).

Vinia australis (Gm.); Sharpe, l. c.

Vini australis Salvad.; Mivart, Mon. Lor. pl. xxvi. fig. 1 (1896).

Vinia kuhlii (Vig.); Sharpe, op. cit. p. 4.

Vini kuhlii Salvad.; Mivart, Mon. Lor. pl. xxvi. fig. 2 (1896).

Coriphilus (Wagl.).

Coriphilus taitianus (Gm.); Mivart, Mon. Lor. pl. xxvii. fig. 1 (1896); Forbes & Robins. Bull. Liverp. Mus. i. p. 6, pl. ii. fig. 1 (var.) (1897).

Sparrman (Mus. Carls. fasc. ii. pl. xxvii.) has described and figured as *Psittacus cyaneus* an entirely blue bird with no white on the cheeks and throat; it may possibly belong to a distinct species. Similar to it appears to be the bird figured by Forbes and Robinson (*l. c.*), but I should think that the latter was an immature specimen of *C. taitianus*.

Coriphilus ultramarinus (Kuhl); Mivart, Mon. Lor. pl. xxvii. fig. 2 (1896).

Trichoglossus Vig. & Horsf.

The key to the species in the 'Catalogue of Birds' requires some alteration on account of the additional forms recently described and the better knowledge we now have of some of the species, especially of *Trichoglossus forsteni*.

Revised Key to the Species of Trichoglossus.

- A. Quills with a coloured band underneath towards the base.
  - *a*. Band towards the base of the quills underneath yellow.
    - a'. Band across the nape greenish yellow.
      - a''. Middle of the abdomen not blue.
        - a'''. Breast mostly yellow; occiput bright green .... *T. hæmatodes.*
        - b'''. Breast red.
          - a^4. Head not entirely blue.
            - a^5. Breast-feathers red, with no tinge of yellow towards the edges (except in young or immature birds).
              - a^6. No dark cross-bands on the breast of adult birds.
                - a^7. Forehead bluish.
                  - a^8. Purple patch behind the green collar smaller...... *T. forsteni.*
                  - b^8. Purple patch behind the green collar large and conspicuous .... *T. djampeanus.*
                - b^7. Forehead greenish (*fide Rothschild & Hartert*) .... *T mitchelli.*
              - b^6. Breast with dark cross-bands.
                - c^7. Dark cross-bands on the breast much broader and very conspicuous.
                  - c^8. Ear-coverts blue .... *T. cyanogrammus.*
                  - d^8. Ear-coverts greenish...... *T. intermedius.*
                - d^7. Dark cross-bands on the breast much narrower.
                  - e^8. Upper parts grass-green .. *T. massena.*
                  - f^8. Upper parts olive-green .. *T. flavicans.*
            - b^5. Breast-feathers red, slightly tinged with yellow towards the edges; forehead and cheeks blue ...... *T. nigrogularis.*
          - b^4. Head entirely blue .... *T. cæruleiceps.*
      - b''. Middle of the abdomen blue; head entirely blue .... *T. novæ-hollandiæ.*
    - b'. Band across the nape orange .... *T. rubritorques.*
  - *b*. Band towards the base of the quills underneath red.................................... *T. rosenbergi.*
- B. Quills with no coloured band beneath; cheeks and breast red .... *T. ornatus.*

TRICHOGLOSSUS HÆMATODES (Linn.); Mivart, Mon. Lor. pl. xxviii. (1896); Finsch, Notes Leyd. Mus. xxii. p. 285 (1901).

Trichoglossus hæmatodus Hartert, Nov. Zool. v. p. 119 (Timor) (1898).

Trichoglossus hæmatodus hæmatodus Rothsch. & Hartert, Nov. Zool. viii. p. 68 (1901); Hartert, Nov. Zool. xi. p. 192 (Wetter and Roma) (1904).

Hab. Timor, Semao, Wetter, Roma, and Sumba.

The form from Sumba has been described by Dr. Hartert as a subspecies under the name of *Trichoglossus hæmatodes fortis* (Nov. Zool. v. p. 120, 1898); he says (*op. cit.* viii. p. 68) that it is "perfectly similar to the typical *T. hæmatodes,* only (bill and wings) larger, besides some minor difference in coloration." As to size, the wing has 147–156 mm. against 144–154 mm. in *T. hæmatodes.* As to coloration, *T. fortis* has the blue on the head less bright and less extended on the crown, besides a distinct green line under the eye as well as above it, mostly but not always present. In Sharpe's 'Hand-list,' ii. p. 4, there is a note from Dr. Finsch (*in litt.*) stating that *T. fortis* is "not distinct from *T. hæmatodes*, the differences being due to age. Both forms from Wetter are in the Leyden Museum."

The synonymy of this form, if separated, would be as follows:—

Trichoglossus hæmatodes Meyer, Verh. z.-b. Ges. Wien, 1881, p. 762 (Sumba); Hartert, Nov. Zool. iii. p. 586 (Sumba: agrees exactly with specimens from Timor) (1896); Finsch, Notes Leyd. Mus. xxii. p. 285 (1901).

Trichoglossus hæmatodes fortis Hartert, Nov. Zool. v. pp. 120, 472 (1898) (Sumba); Rothsch. & Hartert, op. cit. viii. p. 68 (1901); Hartert, op. cit. xi. p. 192 (1904).

Trichoglossus fortis Sharpe, Hand-list, ii. p. 4, no. 2 (1900).

Trichoglossus hæmatodus fortis Rothsch. & Hartert, Nov. Zool. viii. p. 68 (1901).

TRICHOGLOSSUS FORSTENI (Temm.); Hartert, Nov. Zool. iii. p. 176 (part.) (1896); Mivart, Mon. Lor. pl. xxix. (1896);

Hartert, Nov. Zool. iii. p. 572 (Bima) (1896); Forbes & Robins. Bull. Liverp. Mus. i. no. 1, p. 6 (1897).

Trichoglossus hæmatodus forsteni Rothsch. & Hartert, Nov. Zool. viii. p. 68 (1901).

To my description of the adult in the 'Catalogue of Birds' must be added indications of a purple-blue patch behind the light green collar. This patch is wanting in the *young bird*, which differs also in having the red breast-feathers with a yellow tinge and dark green edges; the middle of the abdomen is green, not purple.

Forbes and Robinson rightly notice that "in the figure of *T. forsteni* in Mivart's Monograph the yellow-green ring, though described in the text, has been entirely omitted."

TRICHOGLOSSUS DJAMPEANUS Hartert.

Trichoglossus forsteni, part., Hartert, Nov. Zool. iii. p. 176 (Djampea I.) (1896).

Trichoglossus forsteni djampeanus Hartert, Nov. Zool. iv. p. 172 (1897).

Trichoglossus djampeanus Sharpe, Hand-list, ii. p. 4, no. 4 (1900).

Trichoglossus hæmatodus djampeanus Rothsch. & Hartert, Nov. Zool. viii. p. 68 (1901).

"In every way like *T. forsteni*, from which it differs only in having a slightly longer wing and larger bill, the forehead deeper blue, and a large and conspicuous purple patch behind the light green collar" (*R. & H.*). The differences between the birds of Sumbawa and Djampea appear to me to be very small indeed and scarcely of even subspecific value.

It is interesting to notice that while Dr. Hartert, in last mentioning this form, places it as a subspecies of *T. hæmatodus*, he made it in the first description a subspecies of *T. forsteni*, to which in reality it is more nearly allied than to typical *T. hæmatodus*. It follows that Dr. Hartert would have been quite justified if he had used for the Djampean bird a quadrinomial *Trichoglossus hæmatodus forsteni djampeanus*, to shew that it is a form of *T. hæmatodus* and an under-subspecies of *T. forsteni*.

TRICHOGLOSSUS MITCHELLI G. R. Gr.; Mivart, Mon. Lor. pl. xxxiii. (1896); Rothsch. & Hartert, Nov. Zool. iii. pp. 562, 565, 595, 596 (Lombok) (1896).

Trichoglossus hæmatodus mitchelli Rothsch. & Hartert, Nov. Zool. viii. p. 68 (1901).

Hab. Lombok.

The home of this species was not known when the 'Catalogue of the Parrots' was published; it has since been discovered in Lombok by Mr. Doherty, who has collected a large series for the Tring Museum. This series has shown that the two specimens in the British Museum are not fully adult, since they have the red breast-feathers with an orange or yellow tinge, which is wanting in the fully adult birds. For this reason, it appears, as stated by Rothschild and Hartert, that the "key of the species in the Catalogue is misleading," though it was not so at the time of its publication, according to the materials then at hand.

TRICHOGLOSSUS CYANOGRAMMUS Wagl.; Mivart, Mon. Lor. pl. xxx. fig 1 (1896); Hartert, Nov. Zool. vii. p. 329 (Buru) (1900).

Trichoglossus hæmatodus cyanogrammus Hartert, Nov. Zool. viii. p. 4 (Key I., Teor, Koer, Kisoei, Goram-laut, and Mahawoka) (1901); Rothsch. & Hartert, Nov. Zool. viii. p. 69 (1901).

The common species of *Trichoglossus* in the Key Islands being *T. nigrogularis*, the alleged presence of *T. cyanogrammus* in the same islands appears to be very strange, unless the bird has been introduced there by man, as has been the case with *Eos reticulata*. Dr. Hartert mentions two specimens labelled "Key Islands" in the Tring Museum.

TRICHOGLOSSUS INTERMEDIUS Rothsch. & Hartert.

Trichoglossus nigrogularis Madarász (nec Gray), Termés. Füzetek, x. p. 42 (Gauta-Fluss) (1892).

Trichoglossus cyanogrammus Madarász, Termés. Füzetek, xxii. p. 414 (Stephansort) (1899).

Trichoglossus hæmatodus intermedius Rothsch. & Hartert, Nov. Zool. viii. p. 70 [Stephansort) (1901); iid. Ann. Mus. Nat. Hungar. i. p. 450 (Kaiser-Wilhelmsland) (1903).

Trichoglossus intermedius Madarász, Termés. Füzetek, xxv. p. 351 (1902).

This form, though intermediate between *T. cyanogrammus* and *T. massena*, appears to be scarcely of subspecific value, as, even according to its authors, it has no separate area, extending from Kaiser-Wilhelm's Land to Western New Guinea, within the area inhabited by *T. cyanogrammus*.

TRICHOGLOSSUS MASSENA Bp.; Mivart, Mon. Lor. pl. xxxi. fig. 1 (1896).

Trichoglossus hæmatodus massena Rothsch. & Hartert, Nov. Zool. viii. p. 70 (1901).

TRICHOGLOSSUS FLAVICANS Cab. & Rchnw.; Mivart, Mon. Lor. pl. xxxii. (1896).

Trichoglossus hæmatodus flavicans Rothsch. & Hartert, Nov. Zool. viii. p. 11 (1901).

TRICHOGLOSSUS NIGROGULARIS G. R. Gr.; Mivart, Mon. Lor. pl. xxx. fig. 2 (1896).

Trichoglossus hæmatodus nigrigularis Hartert, Nov. Zool. viii. p. 3 (Key I.) (1901); Rothsch. & Hartert, Nov. Zool. viii. p. 69 (1901).

TRICHOGLOSSUS CÆRULEICEPS D'Alb. & Salvad.; Mivart, Mon. Lor. pl. xxxiv. (1896).

Trichoglossus hæmatodus cæruleiceps Rothsch. & Hartert, Nov. Zool. viii. p. 71 (1901).

TRICHOGLOSSUS NOVÆ-HOLLANDIÆ (Gmel.); ? Mivart, Mon. Lor. pl. xxxv. (1896).

TRICHOGLOSSUS SEPTENTRIONALIS Robinson.

Trichoglossus novæ-hollandiæ Hartert, Nov. Zool. vi. p. 428 (Cape York) (1899).

Trichoglossus novæ-hollandiæ, var. *septentrionalis* Robins. Bull. Liverp. Mus. ii. p. 115 (1900).

Trichoglossus septentrionalis Robins. ibid.; Rothsch. & Hartert, Nov. Zool. viii. p. 68 (1901).

Trichoglossus novæ-hollandiæ septentrionalis Robins. & Laverock, Ibis, 1900, p. 642.

I am not quite satisfied that specimens of the *Trichoglossus* from Northern Australia are distinct from the typical *T. novæ-hollandiæ*. Dr. Hartert has noticed that they are rather small and more brightly coloured. Mr. Robinson also states that they are smaller and have the head and the abdominal patch bright blue and not purplish.

TRICHOGLOSSUS RUBRITORQUES Vig. & Horsf.; Mivart, Mon. Lor. pl. xxxvii. (1896).

Trichoglossus hæmatodus rubritorquis Hartert, Nov. Zool. xi. p. 193 (1904) (Kisser, Roma ?), xii. p. 211 (1905, N.W. Australia).

Dr. Hartert rightly remarks that a specimen from Kisser was probably introduced by man. Most strange it appears that a specimen intermediate between *T. rubritorques* and *T. hæmatodes* should have been shot in Roma; it is in the Tring Museum.

TRICHOGLOSSUS ROSENBERGI Schleg.; Mivart, Mon. Lor. pl. xxxviii. (1896).

Trichoglossus hæmatodus rosenbergi Rothsch. & Hartert, Nov. Zool. viii. p. 71 (1901).

TRICHOGLOSSUS ORNATUS (Linn.); Mivart, Mon. Lor. pl. xxxix. (1896); Hartert, Nov. Zool. iii. p. 161 (Indrulaman) (1896), iv. pp. 159, 165 (1897), v. p. 88 (Talaut group) (1898); Rothsch. & Hartert, Nov. Zool. viii. p. 68 (1901); Hartert, Nov. Zool. x. p. 22 (Kalidupa) (1903).

Besides the above-mentioned species of *Trichoglossus*, two others have been mentioned.

TRICHOGLOSSUS VERREAUXIUS Bp. Rev. et Mag. de Zool. 1854, p. 157 (Australasia); Mivart, Mon. Lor. pl. xxxvi. (1896); Sharpe, Hand-list, ii. p. 5, n. 13 (1900).

TRICHOGLOSSUS COCCINEIFRONS G. R. Gr. P. Z. S. 1858, pp. 183, 194 (Aru I.); Mivart, Mon. Lor. pl. xxxi. fig. 2 (1896); Sharpe, Hand-list, ii. p. 5, n. 9 (1900).

I have not the least doubt that these supposed species are based on abnormal individuals, perhaps hybrids.

PSITTEUTELES Bp.

PSITTEUTELES FLAVOVIRIDIS (Wall.); Mivart, Mon. Lor. pl. xl. (1896).

PSITTEUTELES MEYERI (Wald.); Mivart, Mon. Lor. pl. xli. fig. 1 (1896).

PSITTEUTELES BONTHAINENSIS (Meyer); Mivart, Mon. Lor. pl. xli. figs. 2, 3 (1896).

This form appears to differ from *P. meyeri* only in having the green bands on the under parts somewhat broader.

PSITTEUTELES EUTELES (Temm.); Sharpe, Ann. & Mag. N. H. (ser. 6) vol. xiv. p. 58 (Dammer) (1894); Mivart, Mon. Lor. pl. xlii. (1896); Hartert, Nov. Zool. v. p. 461 (Alor, Pantar, Lomblen) (1898), vii. p. 19 (Dammer) (1900).

Trichoglossus alorensis Finsch, Notes Leyd. Mus. xx. p. 226 (Alor) (1899); Hartert, Nov. Zool. vii. p. 19 (1900) (= *P. euteles* juv.); Finsch, Notes Leyd. Mus. xxii. p. 287, note (1904) (not = *P. euteles* juv.).

Psitteuteles alorensis Sharpe, Hand-list, ii. p. 6, n. 5 (1900).

Trichoglossus euteles Finsch, Notes Leyd. Mus. xxii. p. 286 (Letti, Wetter, Alor, Babber, Kisser) (1904); Hartert, Nov. Zool. xi. p. 193 (1904).

According to Dr. Hartert, *P. alorensis* Finsch, from Alor, is the young of *P. euteles*; but this statement seems to require confirmation, as in the same place Dr. Hartert, mentioning specimens from Dammer, admits the possibility of these being subspecifically different from typical *P. euteles* from Timor, and those from Alor and Pantar intermediate.

The statement that *P. euteles* occurs in Flores (*Wallace*) is open to question, since in that island the next allied species has been found.

PSITTEUTELES WEBERI Büttik. in Weber, Zool. Ergebn. e. Reise in Niederl. O.-Ind. iii. p. 290, pl. xvii. fig. 1 (1894); Forbes & Robins. Bull. Liverp. Mus. i. no. 1, p. 7 (1897); Rothsch. Bull. B. O. C. vi. p. lxiv (1897); Hartert, Nov.

Zool. v. p. 43 (1898); Sharpe, Hand-list, ii. p. 6, n. 6 (1900).

Psitteuteles euteles, part., Mivart, Mon. Lor. p. 129 (1896).

Similar to *P. euteles,* "but the much larger bill, the green head with bluish forehead in the old bird, the yellowish collar on the hind-neck, and the wide yellowish band across the chest distinguish *P. weberi*" (*Hartert*). Wing 120–126 mm.; tail 90–95; tarsus 12; bill in a straight line from the forehead to the tip 20, depth of bill at the base 18.

Hab. Flores (*Büttikofer, Everett*).

PSITTEUTELES CHLOROLEPIDOTUS (Kuhl); Mivart, Mon. Lor. pl. xliii. (1896).

Psitteuteles neglectus Reichenow, Orn. MB. vi. p. 4 (1898) (N. Queensland); Sharpe, Hand-list, ii. p. 6, n. 8 (1900).

Psitteuteles chlorolepidotus neglectus Robins. & Laverock, Ibis, 1900, p. 642 (Cooktown and Cairns).

P. neglectus has been established on the rather smaller dimensions of the North Queensland specimens, but "some of the examples from Cairns are rather larger, approaching the typical form" (*R. & L.*).

Gen. ——?

TRICHOGLOSSUS JOHNSTONIÆ Hartert, Bull. B. O. C. xiv. p. 10 (Mt. Apo) (1903).

♂ ♀ *ad.* Forehead dark rosy red, in the male obscured by greenish tips to the feathers. Narrow loral line and broad line backwards from the eyes meeting (in the female indistinctly) on the nape dark brownish purple (not quite as dark as "prune-purple" (Ridgway, Nomencl. Col. pl. viii. fig. 1). Rest of crown and whole upper surface grass-green, the inner webs of the remiges and the first primary on both webs black, all, with the exception of the first three, with a large sulphur-yellow patch in the middle of the inner webs. Feathers round the mandible to the ear-coverts dark rose-red, those towards the ear-coverts with yellowish-green tips. Feathers of under surface dull sulphur-yellow, with grey bases and broad green tips; lower abdomen and under tail-coverts more greenish yellow, the green tips less distinct. Under wing-coverts yellowish green, those near the edge of the wing dark green, and some of the longest pale yellow; tail from below greenish or brownish yellow. Wing 106–108 mm.; tail 71–74; bill from cere to tip, ♂ 14·5, ♀ 12; metatarsus about 13. "Bill yellowish red."

Hab. Mt. Apo, S. Mindanao, 8000 feet.

"This curious new Parrot resembles in its breast-markings the Celebesian *Psitteuteles meyeri* very closely, but the coloration of the head is more like that of *Ptilosclera versicolor*. It would connect the genera *Psitteuteles* and *Ptilosclera*, which are said to differ by their coloration only" (*Hartert*).

It is interesting to notice that until the discovery of this species no member of the *Loriidæ* had been found in the Philippines.

PTILOSCLERA Bp.

PTILOSCLERA VERSICOLOR (Vig.); Mivart, Mon. Lor. pl. xliv. (1896).

Trichoglossus versicolor Hartert, Nov. Zool. xii. p. 211 (1905).

GLOSSOPSITTACUS Bp.

GLOSSOPSITTACUS GOLDIEI (Sharpe); Mivart, Mon. Lor. pl. xlv. fig. 1 (1896); Rothsch. & Hartert, Nov. Zool. viii. p. 71 (1901).

Glossoptilus (!) *goldiei* Hartert, Nov. Zool. iii. p. 532 (1896).

GLOSSOPSITTACUS CONCINNUS (Shaw); Mivart, Mon. Lor. pl. xlv. fig. 2 (1896).

GLOSSOPSITTACUS PORPHYROCEPHALUS (Dietrichsen); Mivart, Mon. Lor. pl. xlvi. fig. 1 (1896).

GLOSSOPSITTACUS PUSILLUS (Shaw); Mivart, Mon. Lor. pl. xlvi. fig. 2 (1896).

HYPOCHARMOSYNA Salvad.

HYPOCHARMOSYNA WILHELMINÆ (Meyer); Mivart, Mon. Lor. pl. xlvii. (1896); Rothsch. & Hartert, Nov. Zool. viii. p. 71 (1901).

HYPOCHARMOSYNA PLACENS (Temm.); Mivart, Mon. Lor. pl. xlviii. (1896).

Hypocharmosyna placentis (!) Hartert, Nov. Zool. vii. p. 229 (Amblau, south of Buru) (1900), x. pp. 5 (Obi), 46 (Batjan) (1903).

Hypocharmosyna placentis placentis Hartert, Nov. Zool. viii. p. 4 (Little Key, Great Key, Koer Islands, Manggoer, and Goram laut) (1901); Rothsch. & Hartert, Nov. Zool. viii. p. 71 (1901).

I believe that this species may be divided into several subspecies—probably five, if not more; of five I have given the characters in my 'Ornitologia della Papuasia e delle Molucche' (vol. i. p. 310), and they were tabulated there as follows:—

I. Gastræo viridiore, minime flavicante; macula uropygiali cyanea mediocri; maris pileo pallide viridi, minime flavicante; genis cum mento et gula rubris .... Var. A, ex Halmahera.
II. Gastræo pallidiore, viridi-flavicante; maris pileo viridi-flavicante:
  a. Uropygio latissime cyaneo; maris genis, mento et gula rubris .... Var. B, ex Nova Guinea.
  b. Uropygio minus late cyaneo; maris genis rubris, mento et gula vix vel minime rubris:
    a′. Maris mento et gula minus late rubris (*Wallace*) .... Var. C, ex Ceram.
    b′. Maris mento et gula quamplurime vix vel minime rubris:
      a″. Major; long. tot. mm. 175; caudæ mm. 74–72 .... Var. D, ex Kei.
      b″. Minor; long. tot. mm. 165; caudæ mm. 72–65 .... Var. E, ex Aru.

HYPOCHARMOSYNA SUBPLACENS (Sclat.); Mivart, Mon. Lor. pl. xlix. (1896).

Hypocharmosyna placentis subplacens Rothsch. & Hartert, Nov. Zool. viii. p. 71 (Woodlark Island, Sattelberg) (1901).

It appears that Rothschild and Hartert are inclined to recognise several forms of this species, or subspecies as they consider it.

HYPOCHARMOSYNA RUBRONOTATA (Wall.); Mivart, Mon. Lor. pl. lii. (1896).

Dr. Mivart figures only the male, the female has not been depicted yet.

HYPOCHARMOSYNA KORDOANA (Meyer); Mivart, Mon. Lor. pl. li. (♂ ♀) (1896).

HYPOCHARMOSYNA RUBRIGULARIS (Sclat.); Mivart, Mon. Lor. pl. l. fig. 1 (1896).

HYPOCHARMOSYNA AUREOCINCTA (Layard); Mivart, Mon. Lor. pl. l. figs. 2, 3 (1896).

HYPOCHARMOSYNA DIADEMATA (Verr. & Des Murs); Mivart, Mon. Lor. pl. liv. (1896).

Glossopsittacus diadematus Salvad. Cat. Birds Brit. Mus. xx. p. 68 (1891); Sharpe, Hand-list, ii. p. 6, n. 2 (1900).

Not having had the opportunity when I wrote the 'Catalogue of the Parrots' of inspecting an example of this species, and knowing it only from the original description and a rough sketch kindly sent me by the late M. Sallé, I was not at all sure about its generic place. I said that it might possibly belong to the genus *Hypocharmosyna*. This surmise has been fully confirmed by Mivart, who had the advantage of examining the type and only known specimen, which is in the Colonial Collection in the Palais de l'Industrie at Paris. Dr. Mivart's figure is the only one published of this rare species.

This bird belongs to the section of the genus with no yellow band on the under side of the quills, which are entirely dusky, and is easily distinguished by its blue crown.

The re-discovery of this species would be most interesting; very little has been done lately to investigate the fauna of New Caledonia, where it is said to be not uncommon.

HYPOCHARMOSYNA MEEKI Rothsch. & Hartert, Nov. Zool. viii. p. 187 (1901), ix. p. 590, pl. vii. fig. 3 (1903); Dubois, Syn. Av. p. 1055, n. 18 (fasc. xiv., 1903).

"*Male ad.*—Upper surface grass-green, brighter on the forehead. Crown-feathers tipped with dark lead-colour, before the lead-coloured tip a tiny bright green spot, so that the crown looks blackish grey with tiny green spots. Across the interscapulium an orange-brown band nearly a centimetre in width. Remiges black with grass-green outer edges. Lower surface light green, the feathers being yellowish towards the bases. Feathers behind the auricular region with brighter green shaft-lines. Rectrices green, all except the central pair with yellow tips to the inner webs and a narrow portion of the outer web, blackish from below and on the inner webs. Central pair dark green from above, blackish from below. Under wing-coverts green. Iris yellowish-red, feet pale orange or brownish-red, bill dark dirty red. Wing 81 to 86 mm., tail 75 to 78, bill about 13 mm."

Hab. Kulambangra, Solomon Is.

This species differs from *Hypocharmosyna palmarum* of the New Hebrides in the absence of red feathers near the base of the bill, in the absence of yellow tips to the central rectrices, and in the colour of the crown. It differs from *H. pygmæa*, the home of which is still unknown, in the absence of yellow tips to the central rectrices, in the colour of the crown, and in having a brownish-orange band across the back.

The Tring Museum has received three specimens, collected by Mr. A. S. Meek. The supposed male is slightly larger (wing 86) than the female (wing 81); otherwise the two sexes are alike.

Hypocharmosyna palmarum (Gm.); Mivart, Mon. Lor. pl. liii. fig. 1 (1896).

Hypocharmosyna pygmæa (Gm.); Mivart, Mon. Lor. pl. liii. fig. 2 (1896); Forbes & Robins. Bull. Liverp. Mus. i. no. 1, p. 7 (1897).

This species is known only from a single example, formerly in the Leverian Museum and now in the Imperial Museum at Vienna. It differs from *H. palmarum* in lacking the red feathers at the base of the bill and in being slightly smaller. Mr. Layard was of opinion that it might be the female of *H. palmarum*, and, as I have already said, I am much inclined to agree with him. On the contrary, Dr. Mivart, after having examined the type, seemed not to be disposed to adopt Layard's view. The home of this bird is still unknown, a point which is in favour of Layard's opinion. The probability that the Pygmy Parrakeet is the same as *H. palmarum* is increased by what Dr. Forbes and Mr. Robinson write (*l. c.*) :—"Under Pygmy Parrakeet, in Lord Derby's copy of Latham's Gen. Syn. i. pt. 2, p. 256. no. 60 (1787), occurs the following note in Lord Derby's handwriting: 'My specimen (marked as this species by Dr. Latham) came from New Holland, and answers well to his description, except in having a red band from eyes to the bill and over the front.' This specimen has unfortunately disappeared."

CHARMOSYNOPSIS Salvad.

CHARMOSYNOPSIS PULCHELLA (G. R. Gray); Mivart, Mon. Lor. pl. lv. (1896); Rothsch. & Hartert, Nov. Zool. viii. p. 72 (N.W. and S.E. New Guinea) (1901).

Charmosynopsis bella De Vis, Ann. Queensl. Mus. no. 5, pp. 12, 13, pl. viii. (1900).

Charmosyna bella Dubois, Syn. Av. p. 1055, no. 19 (fasc. xiv., 1903) (Wharton Range).

I believe that Mr. Rothschild has already stated that *C. bella* does not appear to be different from *C. pulchella*, and I quite agree with him.

CHARMOSYNOPSIS MARGARITÆ (Tristr.); Mivart, Mon. Lor. pl. lvi. (1896); Forbes & Robins. Bull. Liverp. Mus. i. no. 1, p. 7 (1897); Rothsch. & Hartert, Nov. Zool. viii. p. 187 (Kulambangra) (1901).

The types of this species, male and female, were formerly in Canon Tristram's collection, but only the female is now in the Liverpool Museum, the male type having been lost. The Tring Museum has received a large series (males, females, and immature birds) from Kulambangra; the latter "have the yellow collar above and below ill-defined, the purplish-black collar not developed, and purplish-black edges to the red feathers" (*R. & H.*).

CHARMOSYNA Wagl.

CHARMOSYNA PAPUENSIS (Gmel.); Mivart, Mon. Lor. pl. lvii. (1896).

CHARMOSYNA STELLÆ Meyer; Mivart, Mon. Lor. pl. lviii. (1896); Rothsch. Nov. Zool. iii. p. 18 (Eufa and Mount Victoria) (1896); Rothsch. & Hartert, Nov. Zool. viii. p. 72 (1901).

CHARMOSYNA JOSEPHINÆ (Finsch); Mivart, Mon. Lor. pl. lix. (1896); Rothsch. & Hartert, Nov. Zool. viii. p. 72 (1901).

The type of this species, a female, belongs to the Turati collection in the Museo Civico of Milan.

CHARMOSYNA ATRATA Rothsch. Bull. B. O. C. vii. p. liv (Mt. Scratchley) (1898); id. Ibis, 1898, p. 439; id. Nov. Zool. vi. p. 218 (Mt. Gaivara), pl. ii. fig. 1 (1899); Dubois, Syn. Av. p. 32, no. 413 (fasc. i., 1899); Sharpe, Hand-list, ii. p. 7, no. 4 (1900); Rothsch. Bull. B. O. C. xv. p. 7 (1904).

"Bill red; forehead purplish black, centre of the crown darker. A patch of elongated lilac-blue feathers on the occiput; neck and upper back black, with a reddish shade; under surface dull black, sides of the breast dark green; back and upper wing-coverts dark green; lower back, rump, and sides of the belly carmine; rump with a large patch of lilac-blue; upper tail-coverts dark purplish green; quills black, outer webs broadly bordered with dark green; rectrices green, with narrow edges near the tip, blackish towards the base, without any red; thighs purplish black; under tail-coverts dark purplish, with deep crimson tips; feet orange, with black claws. Wing 146 mm." (*R.*)

Female. Similar to the male, but the lower back, rump, and sides of the belly not carmine but green, with a blue patch in the centre. Total length 234 mm.

Three specimens are known of this dark species: the type, certainly a male, from Mount Scratchley; a second, evidently a female, from Mount Gaivara, near Mount Victoria; and a third, apparently also a female, of which the locality is not given.

Mr. Rothschild says that at first he thought that the type of this species might be a melanistic specimen of *C. stellæ*, but was afterwards persuaded that the assumption could not be justified.

OREOPSITTACUS Salvad.

OREOPSITTACUS ARFAKI (Meyer); Mivart, Mon. Lor. pl. lx. (1896).

OREOPSITTACUS GRANDIS Ogilvie-Grant, Bull. B. O. C. v. p. xv (Owen Stanley Mountains) (no. xxxi., 1895); id. Ibis, 1896, p. 258; Mivart, Mon. Lor. pl. lxi. (1896); Rothsch. Nov. Zool. v. p. 510 (1898); Dubois, Syn. Av. p. 33, no. 415 (1899); Sharpe, Hand-list, ii. p. 7, no. 2 (1900); Rothsch. & Hartert, Nov. Zool. viii. p. 72 (1901).

Oreopsittacus viridigaster De Vis, Rep. Brit. New Guin. 1898, App. p. 81; Rothsch. Nov. Zool. v. p. 510 (1898) (= *O. grandis*).

Oreopsittacus chlorogaster (nom. emend.) Sharpe, Zool. Record, 1898, Aves, p. 43 (1899); Dubois, Syn. Av. p. 1055, no. 415 (fasc. xiv., 1903).

? *Oreopsittacus frontalis* Reichenow, Orn. Monatsb. viii. p. 186 (1900) (Aroa River, S.E. New Guinea).

Similar to *O. arfaki*, but somewhat larger; the male without any red on the abdomen, the female without any orange on the abdomen, which is uniform green.

Male. Upper parts dark green; the pileum bright red, but not so bright as in *O. arfaki*, while the red colour is more extended than in that species. The cheeks and ear-coverts are dark blue with white spots, but the blue is darker and the white spots are larger than in *O. arfaki*. There is no red on the abdomen, though there are some red feathers on the flanks, hidden under the wing. The breast and the abdomen are green and the under tail-coverts green and yellow. The thighs are dark green. The primaries are mainly blackish, but externally edged with blue, which is, however, much less bright than in *O. arfaki*. The under wing-coverts are red, and there is a yellow band beneath the wing, formed by yellow patches in the middle of the inner webs of the quills. The tinge on the tail is of a somewhat darker blue than in the smaller species, and the tip of the tail is much more red.

The female has the pileum of a golden-green tint, and the abdomen is entirely green without any orange tint.

Total length 6·3 inches (=158 mm.), wing 3·5 (=87) tail 3·3 (=83), bill 0·7 (=15), tarsus 0·65 (=14).

Hab. S.E. New Guinea: Owen Stanley Mountains (types), Mount Scratchley, Mount Knutsford (*Antony*); ? Aroa River (*Waiske*).

The types of this species are in the British Museum; they have been figured in Dr. Mivart's Monograph.

There appears to be no doubt about the identity of *O. viridigaster* De Vis with *O. grandis*. I think that *O. frontalis* is based on immature specimens of *O. grandis*; the male has been described as having a narrow frontal red band, like immature male birds of *O. arfaki*.

[To be continued.]

XXVI.—*On the Display of the Lesser Bird-of-Paradise* (Paradisea minor). By W. R. Ogilvie-Grant.

(Plate VIII.)

Owing to the great difficulty and expense of procuring living examples of the Birds-of-Paradise (*Paradiseidæ*), comparatively few have reached the Zoological Society's Gardens in the Regent's Park. Since 1862 the Society has only managed to procure about eighteen specimens, representing seven different species, viz.:—

3 *Paradisea apoda.* Great Bird-of-Paradise.
(1 ♂, Oct. 1885; 1 ♂, June 1902; 1 ♂, March 1905.)
9 *Paradisea minor.* Lesser Bird-of-Paradise.
(2 ♂, April 1862; 2 ♂, May 1878; 3 ♂, April 1884; 2 ♂, March 1905.)
1 *Paradisea rubra.* Red Bird-of-Paradise.
(1 ♂, March 1881.)
1 *Ptilorhis paradisea.* Australian Rifle-Bird.
(1 ♂, April 1882.)

1 *Seleucides nigricans.* Twelve-wired Bird-of-Paradise.
(1 ♂, March 1881.)
2 *Cicinnurus regius.* King Bird-of-Paradise.
(2 ♂, Oct. 1904.)
1 *Manucodia chalybea.* Green Manucode.
(1 ○, March 1881.)

At the present time no fewer than five adult male examples of the three species, *P. apoda, P. minor,* and *C. regius,* are to be seen in the large aviaries in the Insect-House, the two examples of the last-named species being the first brought alive to this country. All these birds, along with others, including females, which unfortunately died, were procured for Mrs. E. J. Johnstone by Mr. Walter Goodfellow, whose name is well known to the readers of 'The Ibis' from his interesting account of his travels in South America and the birds that he met with there.

The two King-Birds were afterwards purchased for the Gardens, and the examples of *P. apoda* and *P. minor* were subsequently deposited there by their owner.

At the date of writing (April 6th, 1905) only one example of *P. minor* is in full plumage, the other male having shed the whole of its ornamental side-plumes, while the male of *P. apoda* is also rapidly moulting.

The King-Birds came into full plumage in February, and grew their long ornamental middle tail-feathers with beautiful tight-curled green tips; but after about three weeks both birds shed these feathers, though they retained their ornamental side-plumes.

Finding that the examples of *P. apoda* and *P. minor* exhibited in the Bird-Gallery at the Natural History Museum, in supposed attitudes of display, were quite wrongly mounted, I have been at considerable pains to make a careful study, with sketches, of the full-plumaged male of *P. minor* now to be seen in the Gardens, and to ascertain what postures he assumes.

The following account of his general behaviour and mode of display, the result of a number of early visits to the Gardens, is, I believe, accurate in every detail, and has been checked and verified by other observers who have accompanied me. The illustrations, drawn from sketches made by Mr. G. E. Lodge and myself with the birds before us, faithfully represent what we saw.

The display almost always takes place in the early morning, between 8 and 9 o'clock; but the Keeper has informed me that on one occasion the bird was seen to "show off" as late as 11.30 A.M. This occurred on a morning when the early hours had been exceptionally dull, but were followed by bright sunshine. *P. minor* has never been observed to display in the afternoon, though *P. apoda* is said to have done so.

On bright sunny mornings the Lesser Bird-of-Paradise has been seen to display seven times in about an hour. The first two displays are generally the longest, and last from four to nine minutes; but they gradually decrease in duration as the bird becomes exhausted, till the final one, which is only sustained for about fifteen or twenty seconds, and may not reach the second or acute stage.

The figures of *P. apoda* and *P. minor* displaying, given in Wallace's 'Malay Archipelago' and Sharpe's 'Monograph of the *Paradiseidæ*' respectively, only shew the first stage of the display; and the final stage shown in Mr. Lodge's coloured drawing (Plate VIII.) has never, so far as I am aware, been figured or properly described.

The purely fanciful figure of *P. minor* by J. Smit, in Elliot's Monograph (plate 4), is wrong in almost every detail, as may be seen by comparing it with Plate VIII.

When at rest in the early morning the bird's long side-feathers hang below the perch with a graceful sweep (text-fig. 21, p. 432); in this position he often remains inactive for long periods, especially if the morning is dull, and on such occasions we have sometimes waited for two hours or more, during which he hardly stirred.

As the morning brightens he periodically rouses himself, and after a few trial-notes and grunts,

ēw, ŏrk: *ē, ŏrk,*

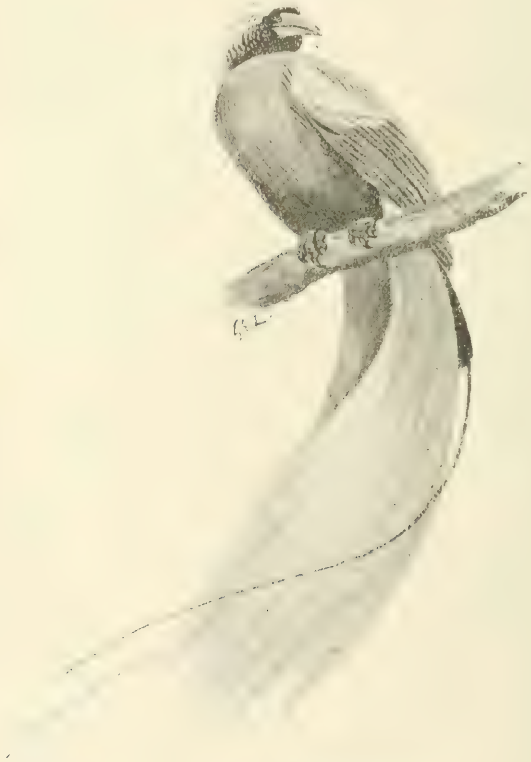
which sound exactly like the preliminary notes made by a trombone-player in an orchestra, utters his ordinary loud cries :

(1) *waāā*! *wŏk-i-wŏk, wauck, wāuck, wauck wauck wauck, wāuck*! **wŏk**! **wŏk**!

or

(2) *waāā*! *wāuk, wāuk, wāuk, wāuk*! **wŏk**!

Text-fig. 21.



Paradisea minor.
(Ordinary attitude when in repose.)

or, again, an ear-piercing

(3) *wak-i-wak*! *wŭk, wŭk, wŭk, wŭk, wŭk, wŭk, wŭk, wŭk*! (very quickly delivered), **wauk**!

Another call, delivered in a higher key, may be written as

(4) *qūā, qūā, qūā, qūā*! **wă**! **wŏw**! **waŭgh**!

The last syllables in all these cries, as indicated by the blacker type, are very loud and emphatic.

Another variation, less often uttered, commences in a high falsetto and sounds like:

(5) *wēē-cā, cā, cā, cā, wā, wā*! **whee-̃ew**! (whistled).

Yet another combination of sounds is:

(6) *wāāa*! *wŏk*! *wă*! **whee-̃ew**! **whee-̃ew**!
whee-̃ew! (whistled), **wă**!

or

(7) the same sounds may be reversed, without the preliminary *waaā*!

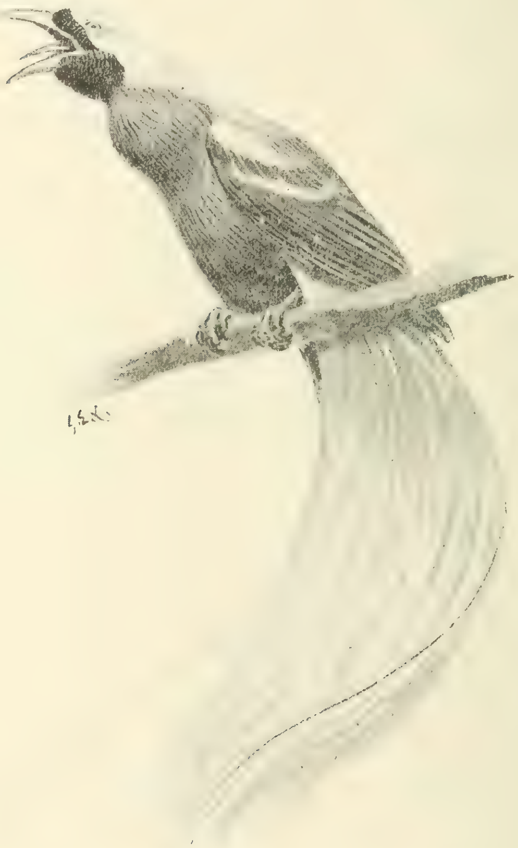
Besides the cries that I have endeavoured to write down, many other variations and combinations of the sounds given above may be heard from time to time; and among the bird's *répertoire* is one which is apparently a faithful reproduction of the well-known call of the "Yaffle," and another like the despairing sounds of a hen that has been caught and is about to have its neck wrung. It is not unlikely that the Paradise-Birds, like so many other members of the Crow-tribe, may possess the power of imitating any sounds they hear, and that this individual, while living in Mrs. Johnstone's aviary, may have learned to mimic the cries of the Green Woodpecker and the moribund fowl.

While sitting at rest the bird also utters many little crooning sounds and growlings in every sort of key. When giving vent to these cries he does not alter his stationary position, but merely stretches out his neck with the bill in a semi-vertical position. Before each syllable is uttered the chest is momentarily swelled out; as it subsides, the throat becomes distended and simultaneously the gape is opened wide and the note or sound delivered with great force (text-fig. 22, p. 434).

As the morning sun begins to stream through the glass roof of the Insect-House, and the temperature of the aviaries rapidly rises, the bird becomes more lively. Flying from perch to perch he takes a few mouthfuls of food, stopping now and then to preen and arrange his gorgeous plumage.

The side-plumes, it should be noted, are ordinarily disposed on either side of the tail, which is fully visible between the two graceful masses of long drooping feathers (text-fig. 23, p. 435).

Text-fig. 22.

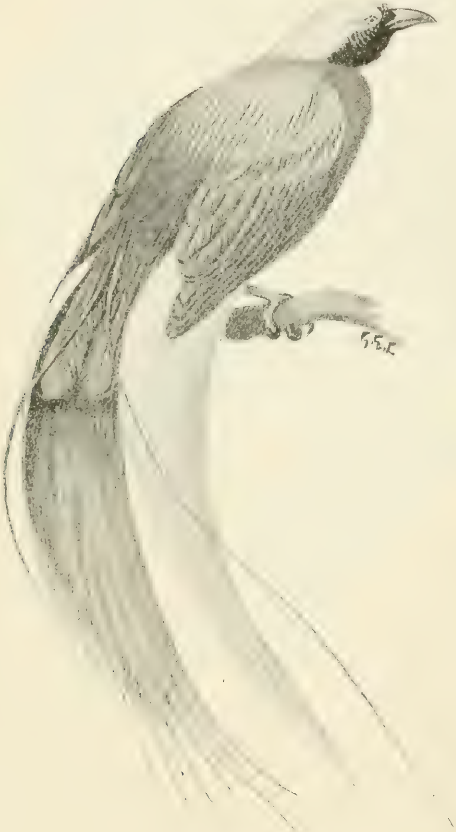


Paradisea minor.
(Calling.)

Presently the increasing warmth seems to stir his blood, and he begins to move in a more excited manner, and straining forward from his perch with slightly opened, quivering wings, utters a loud cry in a high key :

waa! waá! wāā! wāā!´

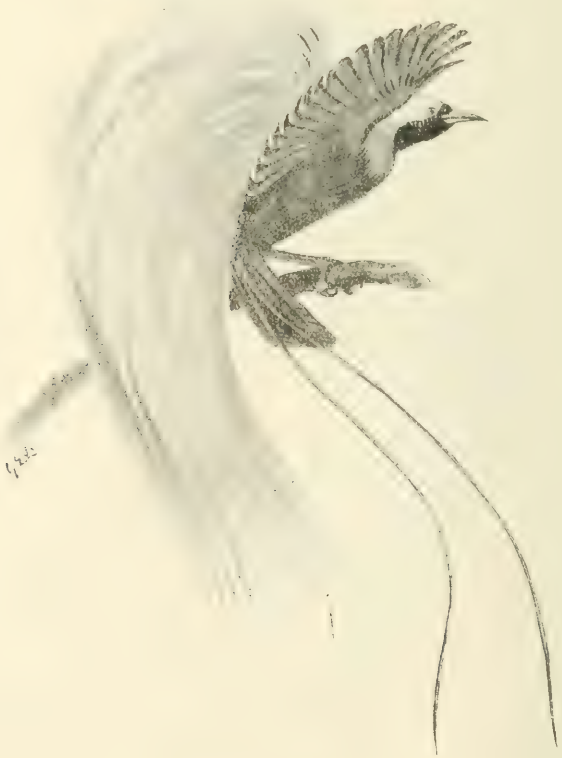
Text-fig. 23.



Paradisea minor.
(Shewing the ordinary position of tail in relation to the side-plumes.)

This cry, which generally precedes the display, is usually uttered two or three times at short intervals, and is sometimes varied by a long series of ear-piercing yells. Immediately after the second or third repetition, the wings are suddenly held out in a semi-vertical position on either side of the body, the tail is bent forward under the perch, and, with a quick shuffle of the plumage, the side-plumes are erected and form an arched cascade over the back, meeting one another in the middle line and completely hiding the depressed tail when the bird is viewed from behind.

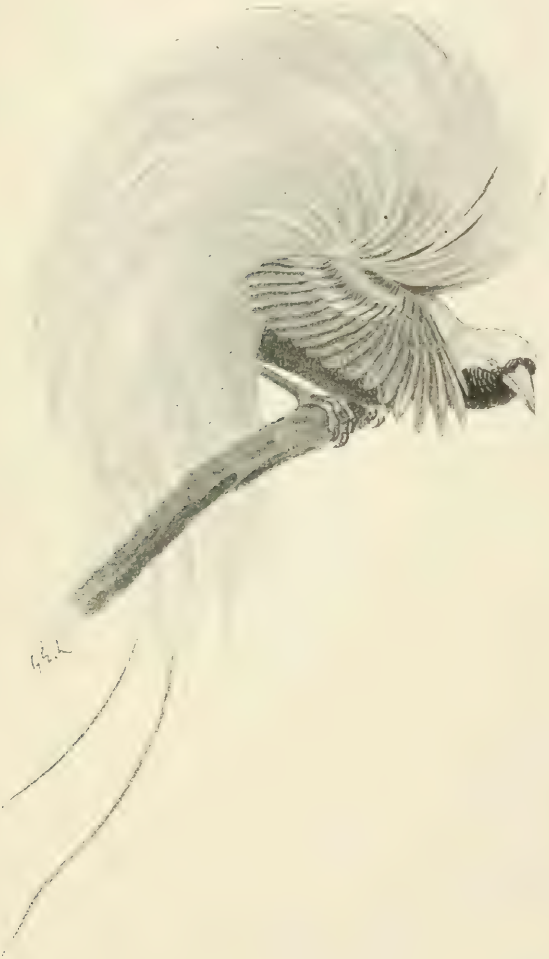
Text-fig. 24.



Paradisea minor.
(First stage of the display.)

In this position the bird appears to be on the point of falling backwards, and the legs form a horizontal right-angle with the perch, the whole weight of the body being apparently supported by the strong toes, which grasp the branch with all the nervous energy of which they are capable (text-fig. 24). This is the first stage of the display; and with every muscle tense, the bird often remains in this attitude from ten to twenty seconds, slightly quivering his wings, and

Text-fig. 25.



Paradisea minor.

(Dancing attitude preceding second stage of the display.)

from time to time hitching up his long plumes, which are raised somewhat above the level of the top of the head. This stage is fairly correctly represented by Gould and Hart in Sharpe's 'Monograph of the *Paradiseidæ*,' part vii. (1897)*.

Suddenly the second stage commences. The bird, seemingly gone mad, commences to dance and hop wildly backwards and forwards along the perch, and with head bent down, wings fully extended horizontally, and side-plumes erected to their utmost, he utters loud harsh cries:

cā! cā! cā! cā!

(text-fig. 25, p. 437).

For some seconds he remains in a sort of ecstasy, rubbing his bill on the perch, and occasionally glancing backwards below his feet with the back fully arched (Plate VIII.).

Presently, the climax being over, he reverts once more to the first, more erect, stage of the display, when the paroxysm either gradually subsides, or is renewed and, after an interval of about half a minute, again reaches the acute stage.

At no time during the display do any of the side-plumes droop forward over the head, as has been stated; even when the latter is lowered under the perch, they still curve *backwards*. An examination of the way in which these feathers are inserted in the skin seems to indicate that it is physically impossible for the bird to direct them over its head, and the shafts are so stiff that they do not naturally fall forwards when erected. The wings are invariably carried *outside* the side-plumes. All the figures by Wolf and Smit, &c., shewing the plumes outside the wings are certainly wrong.

Occasionally the bird stops dead in the middle of his display, his attention being suddenly attracted by some outside interest, such as a Wood-Pigeon or Carrion-Crow passing over the Insect-House. Standing very erect on the perch, the wings are loosely dropped to the sides of the body, the side-plumes partially lowered, and the neck stretched upward. In this position he sometimes remains staring about him for a minute or more, looking for all the world like a domestic cock of some abnormal breed (text-fig. 26).

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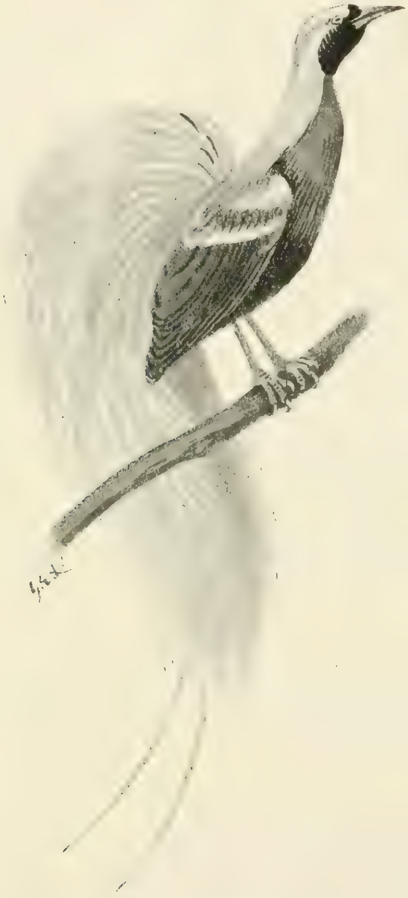
* The Great Bird-of-Paradise (*P. apoda*) in this stage of the display is very accurately shown in the drawing by T. W. Wood which forms the frontispiece to Wallace's 'Malay Archipelago,' vol. ii. (1869).

Text-fig. 26.



Paradisea minor.
(Sudden alarm during the display.)

Bartlett (in Elliot's 'Monograph of the *Paradiseidæ*'), speaking of *P. minor*, writes:—"When uttering their loud call the body was bent forward, the wings spread open and raised up, frequently over their heads, meeting the plumes, which were spread in a most graceful manner, each feather vibrating in a way that almost dazzled the sight. During this display the bird would become greatly excited, and sometimes turn almost under the perch or branch, the head and neck being bent so low down."

Reading this, which was apparently written from memory for Elliot's Monograph, we get no idea of the position of the plumes, but the last lines shew that Bartlett must have witnessed the final stage of the display, which has been fully described above and figured.

It may be worth noting that when scratching their heads the Birds-of-Paradise, like other Passeres, bring the foot over the wing and side-plumes, although the operation is apparently conducted with some difficulty. Under the circumstances we should almost have expected these birds to adopt the more simple mode employed by other birds, such as Parrots.

At my suggestion, Mr. W. P. Pycraft has made a careful examination of the dermal muscles which control the side-plumes in *P. minor*, *P. apoda*, and allied forms; and the results of his investigations will be found in the memoir following.

XXVII.—*On the Pterylography and Dermal Myology of the Lesser Bird-of-Paradise, with especial reference to the "Display."*

By W. P. Pycraft, F.Z.S., A.L.S., &c.

Introductory.

When Mr. Ogilvie-Grant suggested to me that I should endeavour to explain the mechanism by which the extraordinary display of *Paradisea minor* is effected, so as to form a supplement to his own paper on the subject, I had unfortunately no example of that species at hand for examination. Through the kindness of Mr. Beddard, however, this matter was soon remedied by the loan of a specimen in spirits from the collection under his charge at the Prosectorium of the Zoological Society. The complement to this was furnished by the British Museum, in an example of *Paradisea apoda*. The result of a comparison of the specimens of the two species shews that they are practically identical both as concerns their myology and pterylosis. Such small differences as do exist will be pointed out in due course.

Naturally, in working out this question, I compared the muscles of *Paradisea* not only with those of such of its near relatives as I could obtain, but also with the more distant allies, or supposed allies, of the Birds-of-Paradise *. For an opportunity of examining *Ptilorhis paradisea* I have also to thank Mr. Beddard, who kindly sent me a specimen from his stores at the Prosectorium.

From the nature of this investigation it was obviously impossible to ignore questions of pterylosis; and since so little is really known on the subject, Mr. Grant and I feel that this opportunity may well be taken to describe in detail the disposition of all the feather-tracts, of *Paradisea* at least, and not merely those which are directly concerned with the display.

Hitherto the only published accounts on this subject appear to be the very brief and insufficient descriptions of Nitzsch and Giebel, which will be more particularly reviewed later.

PTERYLOGRAPHY.

Pteryla capitis (text-fig. 28, p. 444, *pt.cap.*).—This is a densely feathered area, even the usual interramal space being absent.

Pt. colli dorsalis (text-fig. 27, p. 442, *pt.coll.d.*).—The upper part of this tract turns downwards to blend with the *pt. colli ventralis*; rather below the middle of the neck, after the two tracts have regained their independence, the dorsal tract passes on to a broad ridge of skin, the feathers imbedded in which are very strong. Passing backwards, this ridge merges with the :—

Pt. spinalis (text-fig. 27, *pt.sp.*).—This tract, at a point a little behind a transverse line drawn across the body at the post-patagium, gradually spreads out to form a fan-shaped shield, overlapping on to the pre-ilia. The remaining portion of the tract, caudad of the rounded free edge of the fan, is continued back to the oil-gland as a fairly wide and strongly-marked tract.

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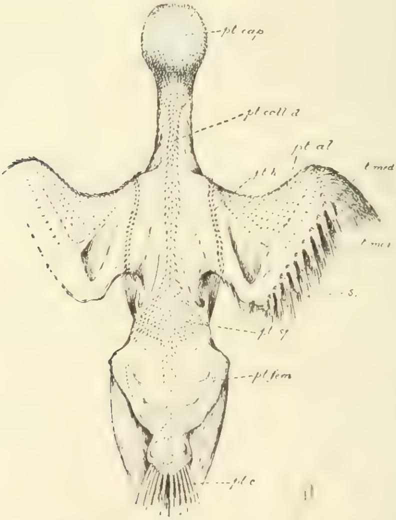
* I have carefully compared the dermal muscles of *Paradisea apoda* with those of *P. minor*, *Ptilorhis paradisea*, *Ptilonorhynchus violaceus*, and *Sericulus melinus*.

Text-fig. 27.



Dorsal view of *Paradisea minor*, shewing the feather-tracts.

pt. cap. = pteryla capitis; *pt. al.* = pt. alaris; *pt. c.* = pteryla caudalis; *pt. coll. d.* = pteryla colli dorsalis; *pt. fem.* = pteryla femoralis; *pt. h.* = pteryla humeralis; *t. maj.* = tectrices majores; *t. med.* = tectrices mediæ; *pt. sp.* = pteryla spinalis. *s.* = secondaries.

Pt. colli ventralis (text-fig. 28, *pt.c.v.*).—This tract does not acquire an independent existence until nearly halfway down the neck, being continuous above with the *pt. coll. dorsalis.*

Near the middle of the neck, in the mid-ventral line, it divides into two branches, strongly developed and passing into the:—

Pt. ventralis (text-fig. 28, *pt.vent.*).—From the base of the neck this passes backwards to form a spoon-shaped tract of considerable size. The outer border thereof is continuous with that of the underlying pectoral muscle, at least as far as the axilla, where the free edge of the tract passes forwards and inwards to the shoulder-joint.

The feathers which make up this portion of the tract are those which form the superb plumes used in the display described by Mr. Grant. They are densely packed at their roots, and arranged, as may be seen in the figure, in more or less perfectly obliquely transverse rows, sloping from above backwards and downwards. By the contraction of the muscles described later, the whole of this tract is drawn upwards and forwards (headwards) so as to approach as nearly as possible to the back.

The inner branch of the *pt. ventralis* is moderately broad and continued backwards to the cloaca.

Pt. femoralis (text-fig. 28, *pt.fem.*).—This is primitive in character, being made up of delicate semiplumes—which are really degenerate contour feathers,—extending forwards to the outer branch of the *pt. ventralis,* upwards to the *pt. spinalis*, and downwards to the *pt. cruralis.* Running across the middle of the thigh is a narrow tract of relatively large feathers, and this, at first, appears to be all that remains of the femoral tract.

Pt. cruralis (text-fig. 28, *pt.cr.*).—The feathers of this tract are scattered thinly over the whole shank and are of a loose texture.

Pt. humeralis (text-fig. 27, *pt.h.*).—This is a long and unusually narrow tract, extending from the shoulder to the lower $\frac{1}{3}$ of the humerus.

Pt. alaris (text-fig. 27, *pt.al.*).—The wing is eutaxic. There are 10 primaries (the 10th remex being very long) and 11 secondaries (the 11th feather is, however, vestigial and hardly to be distinguished from its covert). Both carpal covert and remex are present.

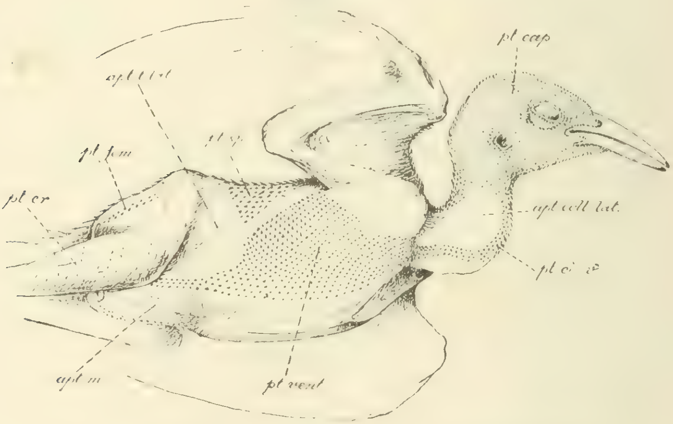
Tectrices.—Only the coverts of the upper surface demand notice here ; those of the ventral surface are reduced to the condition of semiplumes, save the *t. majores* and *t. minores.*

T. majores.—The free edges of the secondary coverts of this series are not continuous with those of the primaries.

T. mediæ.—These are small feathers, calling for no special description; as in *Corvus*, for example, a wide space separates these coverts from the:—

T. minores.—Only one row of these coverts appears to be present; as we have just remarked, these are cut off from the *t. mediæ* by a broad apterion, and this extends back to the elbow, and forwards along the humerus, being bounded by the biceps tendon immediately beneath.

Text-fig. 28.



Side view of *Paradisea minor*, showing the feather-tracts.

pt. cap.=pteryla capitis; *pt. c. v.*=pteryla colli ventralis; *pt. cr.*=pteryla cruralis; *pt. fem.*=pteryla femoralis; *pt. sp.*=pteryla spinalis; *pt. vent.*=pteryla ventralis. *apt. coll. lat.*=apterion colli laterale; *apt. t. lat.*=apterion trunci laterale; *apt. m.*=apterion mesogastræi.

Parapteron.—Owing to the short humerus this is represented only by some six tiny semiplumous feathers wedged in between the *pt. humeralis* and the secondaries.

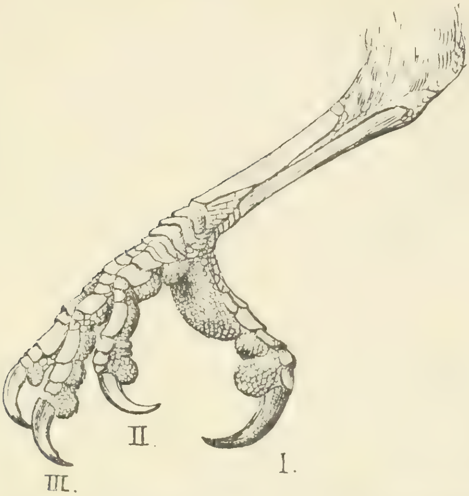
Aftershaft.—This is wanting.

Filo-plumes.—About three of these feathers occur at the base of each contour feather; they are of considerable length along the spinal tract, but do not develop a vane.

Oil-gland.—Naked and nipple-shaped.

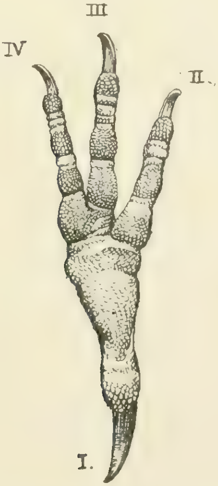
Rhamphotheca.—The tomium is entire; the nostrils open at the extreme base of the beak and are concealed by feathers.

Text-fig. 29.



Side view of foot of *Paradisea minor*, to shew the scales of the acrotarsium and planta.

Text-fig. 30.



Sole of right foot of *Paradisea minor*, to shew the syndactyle condition of the middle and outer toes.

Acrotarsium.—This is covered by three large shields; of these the proximal is of great size; beneath these are two small scutes which overlap the bases of the toes.

Planta.—The planta is covered by one great shield, laterally compressed to form a sharp keel along the outer border of the planta.

The hallux is of great size, much longer than the front toes. The middle and outer toes (text-fig. 30, p. 445), it is to be noted, are united at their bases, so that the foot may well be described as syndactyle.

COMPARATIVE REMARKS.

The pterylological characters of *P. apoda* and *P. minor* are practically identical; but before any result of real value on this subject can be obtained, a large series of specimens of these and other species and genera must be examined.

I have been able to examine only a single specimen of each of *Ptilorhis paradisea* and *Manucodia comrii*, and (among the supposed allies of the Paradise-Birds) of *Ptilonorhynchus violaceus* and *Sericulus melinus*.

Ptilorhis is characterized by a rhombic saddle to the *pteryla spinalis* and a long, narrow, outer branch to the *pt. ventralis*, barely diverging from the inner branch at its extreme end. In *Manucodia* the saddle is spindle-shaped, and the free end of the outer branch of the *pteryla ventralis* is, though narrow, wider than in *Ptilorhis* and more distinct therefrom.

Ptilonorhynchus and *Sericulus* differ from the Birds-of-Paradise in that the saddle of the spinal tract encloses a space as in the Corvidæ. The ventral tract has the outer branch narrow and well separated from the inner.

Dr. C. G. Giebel, in 1877 *, contributed a few short notes on the subject of the pterylosis of the Birds-of-Paradise, based, however, upon an examination of skins only. His observations, therefore, are necessarily of no great value. He accompanied his remarks with small diagrams of the ventral tracts of *"Seleucides alba," Epimachus superbus, E. regius*, and *Diphyllodes magnifica.*

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* Giebel, Zeitschr. f. ges. Naturwissensch. xlix. 1877, p. 143.

The differences between the two species of *Epimachus* are surprisingly great, if these figures are correct, and still more striking is the form of the spinal tract in *Diphyllodes*, which, according to the figure, resembles that of the Hirundinidæ!

Nitzsch*, some years earlier, described very briefly the spinal and ventral tracts of *Paradisea apoda, Epimachus superbus, E. regius*, and *Ptilonorhynchus holosericeus* (*violaceus*).

Epimachus superbus he found to differ from *Paradisea* in that the spinal tract lacked the broad "saddle"; it resembled *Paradisea* in that the outer branch of the ventral tract passed insensibly into the inner, while in *E. regius* it terminated freely as in *Ptilonorhynchus.* The saddle of *E. regius*, it is curious to note, was cordate and bilobate posteriorly.

The Skin-muscles, and how they affect the Display.

The display so vividly described by Mr. Grant is effected, of course, by the harmonious working of a very complex mechanism, but we are concerned here only with certain agents thereof—the action of certain muscles underlying the skin.

The most important is one which, arising by a double head from the side of the great pectoral muscle—described later as the *pectoralis abdominalis pars anterior,*—is inserted into the lower end of the great crowded mass of feathers which forms the outer branch of the ventral tract. When this muscle, under excitement, contracts, it necessarily draws the roots of the mass of plumes concerned upwards and forwards nearer the top of the back and towards the head. So long as this muscle remains tense the feathers will remain erect. After the display they are drawn downwards by the contraction of a long band of muscle arising from the groin and inserted into the end of the mass of plume-roots. The shaking of the plumes is probably effected by rapid waves of contraction and expansion of the erectile muscles; and this is aided by strands of minute muscle passing from feather to feather.

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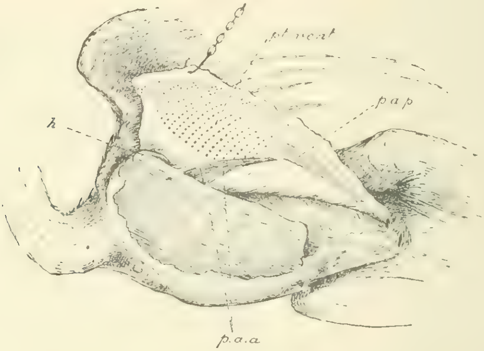
* Nitzsch, "Pterylography," Engl. Transl., Ray Soc. 1867.

The excessive development of muscular tissue beneath the skin of the neck, by which the skin becomes thrown into innumerable tiny rugosities and folds, is hard to explain at present.

Text-fig. 31.



Side view of dissection of *Paradisea minor*, to shew the dermal muscles used for the purpose of erecting the lateral plumes.

pt. vent.=pteryla ventralis; *p.a.a.*=pectoralis abdominalis pars anterior; *p. a. p.*=pectoralis abdominalis pars posterior; *h*=head of humerus.

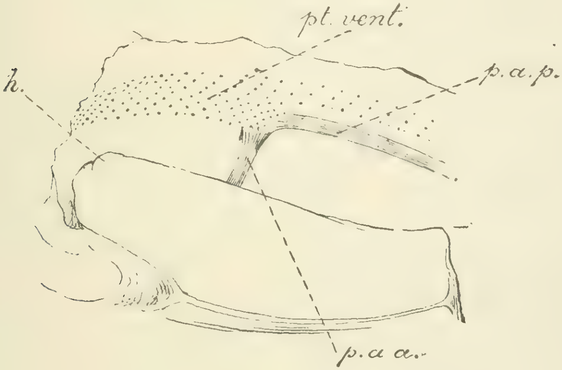
The following more technical description of these and other muscles may prove of value for morphological purposes.

MYOLOGY.

Only those muscles will be described here which are more or less directly concerned with the production of the display. The nomenclature adopted, unless otherwise stated, is that of Fürbringer. This description, it should be remarked, is based on specimens preserved in spirit in the British Museum and the collections of the Zoological Society of London.

Cucullaris dorso-cutaneus.—This muscle, a derivative of the *cucullaris*, is in *Paradisea minor* and *P. apoda* well developed. It rises, in common with, but dorsad of, the *cucullaris propatagialis*, from the wall of the skull immediately behind, and slightly above the postorbital process; expanding upwards and backwards to the middle line, it covers the base of the skull, and thence runs back immediately under the skin, at first as a broad sheet, but rapidly tapering it assumes a narrow band-like form, and just caudad of the scapula fuses with the *latissimus dorsi dorso-cutaneus*. Being closely attached to the under surface of the *pteryla colli dorsalis* and *spinalis* on either side, it serves, on contraction, to raise the dorsal feathers of the neck and fore part of the back. By its contraction, in the spirit-specimen, the skin is thrown into a number of fine wrinkles.

Text-fig. 32.



Side view of a dissection of *Sericulus melinus*, shewing the muscles corresponding to those drawn in text-fig. 31. Note that the pars anterior has but one head, answering to the hinder head seen in *P. minor*.—Letters as in text-fig. 31.

Latissimus dorsi dorso-cutaneus.—This muscle is also well developed. It arises fleshy from the anterior border of the pre-ilium and extends forwards along the border of the *pteryla spinalis* until it ultimately passes into the *cucullaris dorso-cutaneus*.

Cucullaris pars cervicalis.—Arising from the expanded free end of the clavicle, caudad of the tendons for the *tensor* *patagii* and *deltoid,* it passes upwards over the base of the neck, and at the same time expands to form a broad sheet of muscle triangular in shape, and split up to form some half-dozen narrow bands separated by narrow interspaces one from another. These are inserted in the skin along the inner border of the *cucullaris dorso-cutaneus. Action*: all these strands slope tailwards, so that their contraction draws the skin forwards.

Pectoralis abdominalis.—This muscle we must regard as divided into two parts, corresponding to the *pars anterior* and *pars posterior* of Fürbringer—the *subcutaneus thoracis* and *subcutaneus abdominalis* of Gadow.

The *pars posterior* arises from the pubis in the usual manner, but in the form of an extremely delicate tendinous band, which, near the middle of the abdomen, becomes suddenly fleshy and is inserted into the free end of the outer branch of the *pteryla ventralis.*

The *pars anterior* is two-headed. The more caudad answers to the normal head and arises from the dorsal border of the *pectoralis* near its sternal edge. The second head arises *cephalad* of this, from the external fibres of the *pectoralis major* at the axilla ; the two heads fuse to form a broad band inserted into the dorsal border of the outer branch of the *pteryla ventralis.*

Action: These two muscles owe their independence to the suppression of the band at its middle; thereby greater facilities are gained for raising and depressing the long pectoral plumes in display. Contraction of the *pars posterior* depresses the plumes: conversely, by the contraction of the two heads of the *pars anterior* these plumes would be raised and at the same time drawn upwards and thrown slightly forwards.

Serratus superficialis pars metapatagialis.—This is a long band-like muscle arising ventrad of the *serratus superficialis posterior,* from the base of the uncinate of the fourth thoracic rib; extending upwards and forwards it is inserted into the hinder end of the *pteryla humeralis* instead of continuing its course outwards to the elbow.

Comparative Myological Remarks.

I have carefully compared the dermal muscles of *Paradisea minor* with those of its near allies *P. apoda, Ptilorhis paradisea,* and *Manucodia comrii,* as well as—for the sake of shewing the range of variation of the muscles in question—with *Ptilonorhynchus violaceus, Sericulus melinus, Corvus corone,* and *Pityriasis gymnocephala.*

Paradisea minor and *P. apoda* differ only in that the two heads of the *pectoralis abdominalis pars anterior* are inserted nearer together in *P. minor* than in *P. apoda.* The close relationship which obtains between these two forms naturally leads one to expect but slight differences in this matter. The accessory head of the *pars anterior* is found only in these two species, and is to be attributed to the enormous development of the pectoral plumes which these muscles have to drag upwards and forwards and hold in position during the display.

The *pectoralis abdominalis* is normally formed by a single band of muscle extending from the pubis, and running along at first beneath the inner branch of the *pteryla ventralis* it turns upwards and crossing the free end of the outer branch of this tract it is ultimately inserted into the dorsal border of the *pectoralis* in the region of the axilla. Thus it will be found in *Corvus.* In *Ptilonorhynchus* and *Sericulus* this band breaks up into two, connected only by a few slender fibres. The posterior part, as will be seen in text-fig. 32 (p. 449), becomes firmly attached to the free end of the outer branch of the *pteryla ventralis*; the *pars anterior* similarly becomes attached to a slight angulation of the dorsal border of this feather-tract.

In *Sericulus* the *pars anterior* and *pars posterior* are somewhat less distinctly separated, the divided ends being placed closer together to form a sharp angle with one another (text-fig. 32).

In *Manucodia comrii* and *Pityriasis gymnocephala* the variation is slightly more marked. In the first-mentioned the outer branch of the *pt. ventralis* turns slightly upwards, and into the dorsal and ventral angles of the free end these two portions of the *abdominalis* are inserted. The *pars posterior* fixes itself into the ventral angle, the *pars anterior* into the dorsal angle.

In *Pityriasis* the *pars posterior* is inserted into the free end of the region of the tract now under discussion, and the *pars anterior* crosses over this insertion so as to become attached to the postero-internal angle of the tract.

Latissimus dorsi dorso-cutaneus.—This is exceptionally well developed in *Paradisea*; but the same peculiarities which obtain in this genus are met with also in *Ptilonorhynchus* and *Sericulus*; in these genera, however, the muscle is but feebly developed. In *Manucodia comrii* this muscle merges with the *cucullaris* (*pars cranialis*) cephalad of the *dermo-cleido-dorsalis* (*cucullaris pars cervicalis*), at the point where it (*pars cranialis*) turns downwards to its insertion on the clavicle.

SUMMARY.

Though the foregoing detailed descriptions of the pterylosis and dermal myology of the genus *Paradisea* are more complete than any hitherto published, there are yet several matters to be cleared up; and still more remains to be done in the case of other genera.

In so far as *Paradisea* and its display is concerned, I feel that I have been able to add but little to the interest of Mr. Grant's vivid descriptions. The dissecting-table is not the channel through which phenomena like these can be studied.

As touching the pterylosis of *Paradisea*, I would point out the necessity of examining females with a view to ascertaining whether in them the outer branch of the ventral tract is similarly enlarged, and also whether the accessory slip to the muscle attached to this tract is present.

From what I have seen in the course of the preparation of this paper, I am inclined to believe that the Birds-of-Paradise are by no means so closely related to the Corvidæ or to the Ptilonorhynchidæ as is generally supposed at the present day. The results of a further examination of the question I hope to submit to the readers of 'The Ibis' in the near future.

Some years ago Mr. J. G. Goodchild, in his paper on the "Cubital Coverts of the Euornithes"*, contended that the Birds-of-Paradise were unique among the Passeres in that they lacked median coverts. He relied, apparently, solely on the overlap of the feathers. A more thorough examination of the wing shews that Mr. Goodchild was mistaken in this matter. The wing is of the normal Passerine type, though it may possess certain peculiarities of overlap. This point, from lack of fresh specimens, I have been unable to determine. The evidence from skins is absolutely unreliable on this subject.

XXVIII.—*On a small Collection of Birds from the Wadi-en-Natrûn, Egypt.* By W. L. S. Loat, F.Z.S.

The Wadi-en-Natrûn, or Natron Valley, of Egypt is situated in the Libyan Desert about seventy miles W.N.W. of Cairo, and sixty miles nearly due south of Alexandria †. The valley, which is twenty-one miles in length from end to end, lies approximately W.N.W. by E.S.E., and contains a chain of ten alkaline lakes yielding the natron from which the soda-ash of commerce is obtained. Scattered throughout the Wadi are a number of freshwater pools, generally more or less surrounded by a dense growth of a species of papyrus, locally known as "bourdy," which also covers large tracts of the marshy ground, forming, in fact, nearly ninety per cent. of the vegetable growth found there. Tramping through these marshes is by no means pleasant, as the ground under foot generally consists of soft black mud, which in places gives off sulphuretted hydrogen at every step. On the higher ground are stretches of sand-hills sparsely covered with "halfa"-grass and hardy plants; beyond is the desert in which are situated a few monasteries inhabited by Coptic monks.

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* "The Cubital Coverts of the Euornithæ in relation to Taxonomy," Proc. Roy. Phys. Soc. Edinb. vol. x. (1888–90).

† These distances are taken from the centre of the Wadi.

As the Wadi-en-Natrûn is private property, it was necessary to obtain permission to reside there; this was kindly granted me by the Salt and Soda Company to whom it belongs. From the English staff in charge I received every asistance and much useful information as to the most likely places at which to obtain birds, but owing to their scarcity I made but a short stay, lasting only from January 21st to February 24th (1903). This scarcity, not only in point of numbers, but of species, is hardly to be wondered at, when the character and position of the Wadi are taken into consideration, with its alkaline lakes and lack of suitable food, especially for small birds, insect-life being conspicuous by its absence, at any rate during the time that I remained there. Its isolated position, however, would, I imagine, chiefly account for this lack of birds, lying as it does thirty miles (at its nearest point) from the cultivated land of the Nile on the east, and about forty miles from it on the north. The great mass of migrants striking the coast in the neighbourhood of Alexandria would diverge slightly to the east and follow the cultivated land as they proceeded on their journey south; moreover, those migrants that do reach the Wadi evidently come from the north, but, instead of deviating to the east, continue in a direction nearly due south.

Above, in referring to the lack of insect-life, I should have added that this does not apply to the mosquito, for on the two or three occasions when I awaited the evening flight of ducks close to some freshwater pools they (the insects, not the ducks) came over in clouds and attacked me with the greatest persistence.

During my stay I obtained or identified forty-five species of birds; nearly all of these, however, were migrants, the number of residents being very limited.

Although I secured nothing of particular interest, I thought that a list of birds from this rather out of the way spot might be of some slight value to those interested in the birds of Egypt, no one having, so far as I am aware, collected there before*.

In the naming and arrangement of the various species found, I have followed Capt. Shelley's 'Handbook of the Birds of Egypt.' Mr. Ogilvie-Grant, of the Natural History Museum, has kindly assisted me in the determination of some of them. Those marked with an asterisk (*) were identified, but examples were not obtained.

1. Saxicola saltatrix Ménétr. *Ménétries's Wheatear.*
Saxicola isabellina Rüppell.

A few individuals were generally to be seen near some buildings that were close to the desert. The other common Egyptian species, viz. *S. œnanthe*, was not met with.

2. Saxicola deserti Rüpp. *Desert-Chat.*

A few were usually to be found along the edge of the desert.

3. Pratincola rubicola (Linn.). *Stone-Chat.*
♂. 29th Jan. ♀. 5th Feb.

Was first seen on 21st Jan. Not uncommon.

4. Ruticilla phœnicurus (Linn.). *Redstart.*
♂. 2nd Feb. ♀. 9th Feb.

Was first noticed on 21st Jan. An uncommon species.

5. Cyanecula suecica (Linn.). *Blue-throated Warbler.*
♀. 2nd Feb. ♀. 9th Feb.

Uncommon. Both specimens were obtained on an open piece of ground near a freshwater pool and close to a clump of *bourdy*.

6. Pseudoluscinia luscinioides (Savi). *Savi's Warbler.*
♂. 9th Feb.

Of this species, as well as the other Warblers, it was difficult to get a glimpse, on account of their keeping to the dense *bourdy* growth near the freshwater pools and wetter portions of the marshes; and it was only by sitting down and patiently waiting till they came gradually, whilst in search of food, to the edge of the reeds, that I got the chance of a shot.

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* Messrs. N. C. Rothschild and F. R. Henley, who were in the Wadi at the same time that I was, obtained a few birds, some of which I believe were presented to the Medical School, Cairo.

7. Calamodyta schœnobænus (Linn.). *Sedge-Warbler.*
Acrocephalus phragmitis (Bechstein).
♀. 2nd Feb.

Uncommon. Frequenting the same spots as the preceding species.

8. Acrocephalus stentorius (Hempr. & Ehr.). *Clamorous Sedge-Warbler.*
♂. 8th Feb. ♂. 10th Feb. ♂. 14th Feb.

Fairly common. It generally kept to the thicker portion of the *bourdy*, but always betrayed its presence by its loud and peculiar note, which was uttered almost continuously. All the three specimens obtained were in worn and faded plumage.

9. Drymœca gracilis (Rüpp.). *Graceful Warbler.*

Not uncommon amongst the *bourdy*.

Shelley in his 'Handbook to the Birds of Egypt,' pp. 98 & 99, says: "There are apparently two constant forms of this bird, but they hardly differ sufficiently to be separated as distinct species." He considers that those from Lower Egypt are generally darker in colour, have the shaft-markings more pronounced, are larger, and have darker bills; while those from Upper Egypt and Nubia are mostly paler. The two females that I obtained at the Wadi were light-coloured birds with pale lower mandibles. A male shot on an island in Lake Menzaleh in the Delta was of the dark type with a black bill, while another male obtained in Nubia belonged to the light-coloured type and had a dark brown bill.

10. Phylloscopus rufus (Gm.). *Chiffchaff.*
♂. 18th Feb.

This bird's characteristic note was first heard on Feb. 10th. It frequented the same spots as the other Warblers.

11. Hirundo rustica Linn. *Chimney-Swallow.*

♂. 23rd Feb.

This was the first time that I noticed this bird, and it was only seen on one or two occasions subsequently.

12. Hirundo riocourii Audouin. *Oriental Chimney-Swallow.*

A few of these birds were generally to be met with in various parts of the Wadi.

13. Motacilla alba Linn. *White Wagtail.*

Fairly common.

14. Budytes flava (Linn.). *Grey-headed Yellow Wagtail.*

The Grey-headed Yellow Wagtail was first met with in a flock on Feb. 10th, running about on a patch of short grass close to a freshwater pool. Out of this flock I obtained four males and a female, all of which I consider to belong to this species, although Shelley in his 'Handbook to the Birds of Egypt,' pp. 128 & 129, gives two species of Grey-headed Yellow Wagtails, viz. *B. flava*, with "a distinct white eyebrow" and a wing-measurement of 3·2 in., and *B. cinereocapilla*, with an "entire absence of white eyebrow" and wing 2·9 in. In my specimens, two of the males have a distinct trace of white eyebrow and the wing 2·9; while the other two have the same length of wing and only a slight trace of white beyond the eye and not immediately above it; the female, however, which was one of the same flock, has a very distinct eyebrow of a dirty white colour.

15. Anthus cervinus Pall. *Red-throated Pipit.*

This species, which was the only kind of Pipit met with, was fairly numerous, and generally to be found on any patch of damp ground in the vicinity of the lakes and freshwater pools.

16. Certhilauda desertorum (Stanley). *Bifasciated Lark.*

This bird was not uncommon along the edge of the desert.

17. Galerita cristata (Linn.). *Crested Lark.*

A few were generally to be met with, but usually in the vicinity of habitations. They all belonged to the light-coloured variety.

18. Circus æruginosus (Linn.). *Marsh-Harrier.*

A specimen was obtained on Jan. 26th, and others were seen on one or two occasions slowly flying about above the *bourdy* on the look-out for small birds.

19. *Circus pallidus Sykes. *Pale-chested Harrier.*

Seen on one occasion only.

20. Falco æsalon Linn. *Merlin.*

A male was obtained on Feb. 12th.

21. Coturnix communis Bonn. *Quail.*

A dead Quail was picked up on the edge of the desert on Feb. 11th.

22. Cursorius gallicus Gm. *Cream-coloured Courser.*

This species was met with on two or three occasions along the edge of the desert. It is somewhat shy and not easy to approach. The colour of its plumage, harmonizing as it does with the sand of the desert, makes it a difficult bird to distinguish until it moves.

23. *Vanellus cristatus Meyer. *Lapwing.*

A flock of five individuals of this species was seen on Jan. 25th; and several more were observed on subsequent occasions, frequenting a large piece of marshy ground covered with short grass.

24. *Hoplopterus spinosus (Linn.). *Spur-winged Plover.*

A solitary individual was seen on Feb. 15th. I was informed that a number of these birds had been seen in the Wadi during the previous September.

25. Ægialitis cantiana (Lath.). *Kentish Plover.*

A few individuals were generally to be found along the edges of some of the lakes and freshwater ponds.

26. *Numenius arquata Linn. *Curlew.*

This species was seen on one or two occasions.

27. Limosa ægocephala (L.). *Black-tailed Godwit.*

A single specimen was obtained on Feb. 15th.

28. MACHETES PUGNAX (Linn.). *Ruff.*

The Ruff was fairly numerous.

29. *GALLINAGO MEDIA Leach. *Snipe.*

Generally distributed throughout the more marshy parts of the Wadi, but nearly always in places where there was a certain amount of *bourdy* growing.

30. *GALLINAGO GALLINULA (Linn.). *Jack-Snipe.*

This species was flushed on one or two occasions, but from more open ground than was the case with the preceding.

31. TRINGA MINUTA Leisler. *Little Stint.*

This bird was fairly numerous, and was generally to be met with round the edges of the open freshwater ponds.

32. TOTANUS CALIDRIS Linn. *Redshank.*

A few were generally to be found on the shores of some of the lakes and larger freshwater pools. One evening, about half an hour after sunset, while awaiting the evening flight of Ducks, two fair-sized flocks passed me flying low and at a great pace.

33. TOTANUS STAGNATILIS Bechst. *Marsh-Sandpiper.*

This Sandpiper was not common. It frequented the large shallow freshwater ponds.

34. TOTANUS GLAREOLA (Linn.). *Wood-Sandpiper.*

By no means a common bird, and only met with on two or three occasions. When disturbed it goes off with a twisting flight, then turns short and drops abruptly to the ground, after the manner of a Jack-Snipe.

35. RECURVIROSTRA AVOCETTA L. *Avocet.*

Two or three flocks were seen standing in the shallower parts of one or two of the more secluded lakes.

36. PHŒNICOPTERUS ANTIQUORUM Bp. *Flamingo.*

On one of the largest alkaline lakes an immense flock of these birds, numbering several thousands, was generally to be seen, standing well out in the shallower portions, near the centre of the lake. I noticed that they often became very noisy towards sunset, keeping up their clamour for several hours after it was dark.

37. Rallus aquaticus L. *Water-Rail.*

Mr. Newlove, of the English staff, shot one of these birds in a patch of *bourdy* growing by the edge of a freshwater pool.

38. Fulica atra Linn. *Coot.*

Several of these birds frequented the larger freshwater ponds.

39. *Anas boschas Linn. *Wild Duck.*

One of the least numerous of the Duck-tribe met with in the Wadi.

Speaking generally, the Anatidæ were well represented in point of numbers, if not in species. They arrive, as I was informed, during December, and take their departure about the beginning of April, though a few remain all the year round. The greater number passed the day on the larger alkaline lakes, leaving them about sunset for their feeding-grounds in the freshwater pools and wetter portions of the marshes.

40. Dafila acuta (Linn.). *Pintail.*

A fairly numerous species. Locally known as "Balboulie."

41. Rhynchaspis clypeata (Linn.). *Shoveler.*

The most abundant of all the Ducks. Known locally by the name of "Abu mulla'a," meaning "Father of a spoon."

42. Querquedula crecca (Linn.). *Teal.*

Next to the Shoveler, I should consider this to be the most numerous species. Its local name is "Keesh."

43. Mareca penelope (Linn.). *Wigeon.*

I did not find this a common species.

44. Nyroca leucophthalma (Bechst.). *Ferruginous Duck.*

Although this Duck was obtained only on one occasion, it was not an uncommon species in the Wadi.

45. Podicipes minor (Linn.). *Little Grebe.*

A few of these birds frequented some of the freshwater pools.

Two very common Egyptian residents, viz. the Parasitic Kite, *Milvus ægyptius*, and the Hooded Crow, *Corvus cornix*, were, so far as I could learn, never seen in the Wadi.

On Feb. 13th a Crow, which I took to be *Corvus umbrinus*, was observed near the edge of the desert.

The Hoopoe, *Upupa epops*, was occasionally seen in the Wadi.

Owls were very uncommon, two only having been observed during my stay: one was a small bird, which, in the distance, appeared to be of a more or less uniform greyish colour, and was seen, late one morning, sitting on a mound close to the edge of the desert. From its general appearance, I am inclined to think that it was *Scops giu*. The other Owl, a large dark-coloured bird, probably *Asio accipitrinus*, was observed flying around the spot where I was awaiting the evening flight of Ducks.

A large Vulture, possibly *Gyps fulvus*, was noticed on one occasion circling round at a great height.

A few Egyptian Vultures, *Neophron percnopterus*, are said to occasionally visit the Wadi.

On Feb. 18th a flock of about fifty Gulls was seen standing in one of the lakes, but too far off to be identified with certainty.

XXIX.—*On further Collections of Birds from the Efulen District of Camaroon, West Africa.* By R. Bowdler Sharpe, LL.D. *With Notes by the Collector,* G. L. Bates.—Part III.*

(Plate IX.)

The present paper continues the account of the collection sent home by Mr. Bates in 1904; while on his return to Europe he brought with him a further interesting series of birds, which I also catalogue, as they are mostly from the River Ja.

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* See Part I. 'Ibis,' 1904, p. 88; Part II. 'Ibis,' 1904, p. 591; and Mr. Bates's Field-notes above, p. 89.

Mr. Bates has added some field-notes on the species observed by him, and sends the following introduction :—

"I have already spoken of the fact that the birds of this district may be pretty clearly divided into two classes—those inhabiting the bushes and small trees of old cleared ground which is returning to forest, and those of the forest itself. The birds of the clearings are seldom seen in the forest, and the forest-birds are seldom seen in the clearings, though some species are found in both.

"The birds of the clearings feed singly or in pairs, or, in the case of seed-eaters, in flocks; and at times gather together in numbers in the tops of fruit-trees. But most of the birds of the forest have a peculiar way of feeding that is worth describing. They go about in roving companies, consisting of individuals of many species mingled together. These companies keep together only loosely, and may be scattered through the tops of many adjoining trees, often only one or two birds in a tree. Each flies or hops from branch to branch on its own account, and there is no concerted movement; yet all move in the same direction and keep together. They are mainly engaged in looking for insects, but also keep up a continual noise with their various cries and songs. The noisiest birds seem to act as guides to the rest, just as men walking scattered through a forest halloo to each other, or as the leader of a troop of monkeys barks to keep his followers together. I propose here to call such a company of birds by the native name of *éjak*.

"Nearly all the forest-species of birds feed in this way, more or less. Each *éjak* contains individuals of from three or four to eight or ten species. Nearly always two or three of the Black Drongo (*Dicrurus atripennis*) are the most conspicuous birds of the *éjak*. Other species generally found in these companies are *Criniger calurus, Bleda tricolor, Anthothreptes fraseri*, some species of *Malimbus*, and some Woodpeckers. Many other forest-species are seen in them. Nearly every large *éjak* has also one or more squirrels in it.

"No reason connected with the finding and securing of the food can be given to explain this curious habit. It looks as if the little creatures, fond of good cheer and society, are driven by the gloom and loneliness of the forest to seek each other's company. The bird-population of the forest is not nearly so dense as that of the old cleared land; the number both of species and of individuals found in the forest is less. If the little birds were evenly scattered through the forest they would be lonely. It is noticeable that certain strictly forest-birds, such as the different species of *Turdinus*, *Alethe*, *Stiphrornis*, and some of *Bleda*, which live hidden in the undergrowth and feed among the dead leaves, are not often seen in the *éjak*. They seem to be at home in the forest, and to have no need of companions and noise to cheer their spirits. On the other hand, when a bird of which the more natural home is in the light of clearings goes into the forest, it joins itself to an *éjak*. Thus *Oriolus lætior*, *Barbatula duchaillui*, and *Ixonotus guttatus* are birds of the open land; yet I have seen all of them in the depths of the forest just once, and that in an *éjak*.

"One of these companies may easily be followed for a long time, as it moves slowly. When the birds are frightened they scatter and become silent for a few moments; then they may be heard assembling again further on. Once I observed the same *éjak* for three days. It passed my camp going east the first day; I saw it and watched it half a mile or more to the east the second day; the third day it passed the camp again going westward. The birds in an *éjak* sleep where night overtakes them."

I now proceed with the systematic list of the species and remarks thereupon.

1. STREPTOPELIA ERYTHROPHRYS Swains.

Streptopelia semitorquata (*nec* Rüpp.); Sharpe, Ibis, 1904, p. 596.

Nos. 470, 472. River Ja, May 11, 12, 1904.

2. CALOPELIA BREHMERI.

Calopelia brehmeri (Hartl.); Sharpe, Ibis, 1904, pp. 95, 596.

Nos. 642, 652. ♂. River Ja, June 7, 9, 1904.

3. Tympanistria tympanistria.

Tympanistria tympanistria (Temm.); Sharpe, Ibis, 1904, p. 94.

No. 490. ♂. River Ja, May 14, 1904.
No. 618. ♀. ,, June 3, 1904.

4. Crecopsis egregia.

Crecopsis egregia (Peters); Sharpe, Hand-l. B. i. p. 100 (1899).

Crex egregia Peters; Reichenow, Vög. Afrikas, i. p. 278 (1900).

No. 601. ♀ ad. River Ja, May 30, 1904. Eggs in the ovary in course of formation.

5. Gymnogenys typicus.

Polyboroides typicus Smith; Reichenow, Vög. Afrikas, i. p. 531 (1901); Sharpe, Ibis, 1904, pp. 98, 596.

No. 473. ♀. River Ja, May 12, 1904. Eggs in the ovary beginning to form.

6. Gypohierax angolensis.

Gypohierax angolensis (Gm.); Sharpe, Ibis, 1904, p. 601.

No. 498. ♂ ad. River Ja, May, 16, 1904.

7. Tigrornis leucolopha.

Tigrornis leucolopha Jard.; Sharpe, Ibis, 1904, p. 98.

No. 544. ♀. River Ja, May 21, 1904.

8. Accipiter melanoleucus.

Astur melanoleucus Reichenow, Vög. Afrikas, i. p. 551 (1901).

Accipiter melanoleucus Smith; Sharpe, Ibis, 1904, p. 102.

No. 474. ♀ ad. River Ja, May 12, 1904.

9. Astur castanilius.

Astur tachiro castanilius Bp.; Reichenow, Vög. Afrikas, i. p. 554 (1901).

Astur castanilius Sharpe, Ibis, 1904, p. 597.

No. 724. Juv. Efulen, May 1904.

10. Urotriorchis macrurus.

Urotriorchis macrurus (Hartl.); Reichenow, Vög. Afrikas, i. p. 568 (1901); Sharpe, Ibis, 1904, p. 597.

No. 723. Ad. Efulen, May 1904.

11. ASTURINULA MONOGRAMMICA.

Kaupifalco monogrammicus (Temm.); Reichenow, Vög. Afrikas, i. p. 547 (1901).

No. 682. ♀. River Ja, June 14, 1904. Eggs in ovary in course of formation.

12. DRYOTRIORCHIS BATESI.

Dryotriorchis batesi Sharpe, Ibis, 1904, p. 600.

No. 444. ♀ ad. Efulen, April 14, 1904. Ovaries small.

13. PERNIS APIVORUS.

Pernis apivorus (L.); Reichenow, Vög. Afrikas, i. p. 613 (1901); Sharpe, Ibis, 1904, p. 603.

No. 630. ♂ imm. River Ja, June 1904. Testes small.

This is a late date for a migratory bird from the north to be found in Africa.

14. HALCYON BADIUS.

Halcyon badius Verr.; Sharpe, Ibis, 1904, p. 608.

No. 671. ♀. River Ja, June 13, 1904. Eggs in ovary in course of formation.

15. MELITTOPHAGUS AUSTRALIS.

Melittophagus australis (Reichenow); Sharpe, Ibis, 1904, p. 611.

No. 464. ♀ ad. River Ja, May 9, 1904.

16. HAPALODERMA NARINA.

Hapaloderma narina (Steph.); Sharpe, Ibis, 1904, p. 613.

No. 452. ♂ ad. Efulen, April 18, 1904.

17. METALLOCOCCYX SMARAGDINEUS.

Metallococcyx smaragdineus (Sw.); Sharpe, Ibis, 1904, p. 614.

No. 454. ♂. Efulen, April 20, 1904. "Ta-ôjoé."

18. CHRYSOCOCCYX KLAASI.

Chrysococcyx klaasi (Steph.); Sharpe, Ibis, 1904, p. 614.

No. 663. ♂ ad. River Ja, June 11, 1904.

No. 677. ♂ ad. „ June 13, 1904.

19. CHRYSOCOCCYX CUPREUS.

Chrysococcyx cupreus (Bodd.); Sharpe, Ibis, 1904, p. 614.

Nos. 674, 676. ♂ ♀. River Ja, June 13, 1904.

20. CENTROPUS ANSELLI.

Centropus anselli, Sharpe, P. Z. S. 1874, p. 204, pl. xxxiii. fig. 1; Shelley, Cat. B. xix. p. 359 (1891); Reichenow, Vög. Afrikas, ii. p. 70 (1902).

No. 599. ♂ ad. River Ja, May 30, 1904. Testes rather large.

Compared with the type from the Ogowé River (wing 7·6 in.) this specimen seems to be rather small (wing 6·6). In other dimensions also it seems to be a little less, having the culmen 1·4 (type 1·6), tail 9·3 (type 11·7), tarsus 1·7 (type 2·0). The total length of the type-specimen is 22·5 inches, while that of the Ja River bird is 17·6.

This species is apparently now recorded from Camaroon for the first time.

21. LYBIUS BIDENTATUS.

Lybius bidentatus (Shaw); Sharpe, Ibis, 1904, p. 616.

No. 707. ♀ juv. River Ja, June 20, 1904. Ovaries small.

No. 710. ♀ ad. River Ja, June 21, 1904. Eggs in the ovary in process of formation.

[This bird was only seen in the small trees of some ground which was returning to forest, near the village, and there generally in the fruit-trees: the stomach invariably contained fruit. The iris is nearly white, and the naked skin round the eye yellowish white.]

22. BARBATULA SUBSULFUREA.

Barbatula subsulfurea (Fraser); Sharpe, Ibis, 1904, p. 617.

No. 712. ♀ ad. River Ja, June 22, 1904. Eggs forming in the ovary.

No. 715. ♂ ad. River Ja, June 23, 1904. Testes rather small.

23. BARBATULA FLAVISQUAMATA.

Barbatula flavisquamata (Verr.); Sharpe, Ibis, 1904, p. 618.

No. 717. ♀. River Ja, June 23, 1904. Eggs forming in the ovary.

24. Dendropicus gabonensis.

Dendropicus gabonensis (Verr.); Sharpe, Ibis, 1904, p. 619.

No. 690. ♀ ad. River Ja, June 15, 1904. Eggs forming in the ovary.

25. Verreauxia africana.

Verreauxia africana (Verr.); Sharpe, Ibis, 1904, p. 620.

Nos. 451, 455. ♂ ♀. Efulen, April 18–20, 1904. "Ôbôô-mink."

No. 477. ♂ juv. River Ja, May 13, 1904.

The adult male and female appear to be perfectly alike in plumage, but the young bird has the lower parts washed with rusty brown, in this respect agreeing with the specimen from Gaboon in the British Museum. This was purchased from the Maison Verreaux, and is doubtless the type of *Sasia africana* J. & E. Verr.

26. Pitta reichenowi.

Pitta reichenowi Madarász: Sharpe, Ibis, 1904, p. 621.

No. 641. ♀. River Ja, June 7, 1904. Eggs forming in the ovary.

27. Psalidoprocne petiti.

Psalidoprocne petiti Sharpe & Bouvier; Sharpe, Ibis, 1904, p. 621.

Nos. 465, 466. ♂. River Ja, May 10, 1904. "Nguleyebe."

No. 586. ♂. River Ja, May 27, 1904. Testes large.

No. 615. ♂. ,, June 2, 1904. Testes large.

28. Hirundo gordoni.

Hirundo gordoni Jard.; Sharpe & Wyatt, Monogr. Hirund. ii. p. 397 (1885); Reichenow, Vög. Afrikas, ii. p. 418 (1903).

No. 462. ♂. River Ja, May 6, 1904. "Ngomeko."

Nos. 700–701. ♂ ad. et juv. River Ja, June 17, 1904.

No. 702. ♀ ad. River Ja, June 17, 1904. Eggs forming in the ovary.

This species does not appear to have been recorded from Camaroon before.

[This large Swallow is more often seen at rest than either species of *Psalidoprocne*, which seem to have learned the secret of perpetual motion. On my last trip to the Ja I several times saw examples of *Hirundo gordoni* on the clayey paths getting mud on their bills. No. 462 was shot while doing this, and a lump of mud was found on its bill. Nos. 700–702 were caught from a colony which was nesting in a hollow tree near the Ja. I have never obtained these Swallows about Efulen, where they must be less common than further inland. But the old nest in which the specimen of *Cypselus batesi* was caught, near Efulen ('Ibis,' Jan. 1905, p. 91), must have been that of this or a similar Swallow.]

29. PEDILORHYNCHUS CAMARUNENSIS.

Pedilorhynchus camarunensis Reichenow; Sharpe, Ibis, 1904, p. 624.

No. 53. ♀ ad. River Ja, Feb. 1903. "Kula."
No. 302. ♂ ad. ,, Dec. 26, 1903.
No. 324. ♂ ad. ,, Dec. 31, 1903.
Nos. 621, 622. ♂ ad. River Ja, June 4, 1904.
No. 672. ♀ ad. River Ja, June 13, 1904.

30. CHLOROPETA BATESI, sp. n.

Similis *C. kenyæ* Sharpe, pileo dorsoque concoloribus, illo vix fuscescente, sed a speciebus omnibus generis *Chloropetæ* notæo sordide olivascenti-brunneo distinguenda. Long. tot. 5·1 poll., culm. 0·65, alæ 2·3, caudæ 2·1, tarsi 0·85.

No. 589. ♀ ad. River Ja, May 27, 1904. Eggs forming in the ovary.

No. 695. ♂ ad. River Ja, June 16, 1904.

This species might have been expected to be *C. major* of Hartert (Bull. B. O. C. xiv. p. 73, 1904), from Angola, but it is a smaller bird than *C. natalensis*, not larger. Like the Angolan species, it has a narrow line of yellow running from the lores above the eye. The Camaroon birds are much darker than any of the other species, with the crown not perceptibly differing from the back in colour, but being of a dark olive-brown tint, inclinimg to dull olive-yellow.

31. DIAPHOROPHYIA CASTANEA.

Diaphorophyia castanea (Fraser); Sharpe, Ibis, 1904, p. 625.

No. 713. ♂ ad. River Ja, June 22, 1904.

32. DIAPHOROPHYIA CHLOROPHRYS Alexander.

No. 691. ♀ ad. River Ja, June 15, 1904. Eggs forming in the ovary.

I cannot see any material difference between this specimen and others obtained in Fernando Po by Capt. Boyd Alexander and Mr. Seimund.

33. PLATYSTIRA CYANEA.

Platystira cyanea (P. L. S. Müll.); Sharpe, Ibis, 1904, p. 626.

No. 604. ♂. River Ja, May 31, 1904. Testes large.

34. SMITHORNIS ZENKERI.

Smithornis zenkeri Reichenow; Sharpe, Ibis, 1904, p. 627.

No. 705. ♂ ad. River Ja, June 18, 1904. Feet rather large.

The male now received is darker than the female sent by Mr. Bates from Efulen (*cf.* Sharpe, *l. c.*). The chestnut on the chest seems to be quite as dark as in *S. sharpei* from Fernando Po, and the only difference that I can see between the two species is that *S. sharpei* shews an olive tint on the back, whereas *S. zenkeri* is a little more ruddy. The two forms are undoubtedly very closely allied.

35. SMITHORNIS CAMARUNENSIS, sp. n.

Smithornis rufilateralis (*nec* Gray); Sharpe, Ibis, 1904, p. 627.

No. 456. ♂ ad. Efulen, April 20, 1904. "Nome-kupmefan."

No. 521. ♀ ad. River Ja, May 17, 1904.

In my former paper, I stated that I could not distinguish between male birds from Camaroon and similar examples from the Gold Coast. I still find it impossible to find characters for separating the males from these two localities, but the females are strikingly different, and on the female I found the new species as follows:—

♀. Similis *S. rufilaterali* ♀, sed tectricibus alarum rufescenti-fulvo, minime albo terminatis; regione parotica et colli lateribus pallide rufescentibus, minime aurantiaco-castaneis, late nigro striatis; pileo saturate schistaceo, late nigro striato; notæo rufescente umbrino, plumis late nigro striolatis. Long. tot. circa 5·6 poll., culm. 0·65, alæ 2·7, caudæ 1·85, tarsi 0·65.

The Camaroon bird is everywhere more distinctly streaked with black than the typical Gold-Coast form. On the under surface the black streaks are very broad and extend to the under tail-coverts. The conspicuous orange patch on the sides of the neck in *S. rufilateralis* is absent in *S. camarunensis*, these parts being merely rufescent, with broad longitudinal centres of black. The head is slaty-black, with black centres to the feathers.

36. ARTOMYIAS FULIGINOSA.

Artomyias fuliginosa Verr.; Sharpe, Ibis, 1904, p. 628.

No. 402. ♀ juv. Efulen, March 26, 1904.

No. 708. ♂ ad. River Ja, June 21, 1904.

This specimen was erroneously referred to *Alseonax epulata* in my former paper ('Ibis,' 1904, p. 622), where I described it as "spotted with sandy buff after the manner of Flycatchers." Mr. Bates, however, assures me that it is undoubtedly the young of *Artomyias*, and it is therefore of great interest, as proving that this genus is truly Muscicapine in its first plumage.

37. TCHITREA VIRIDIS.

Tchitrea viridis (P. L. S. Müll.); Sharpe, Ibis, 1904, p. 630.

No. 457. Ad. River Ja, March 1904. "Abelebe."

No. 406. ♀ ad. ,, May 14, 1904.

No. 555. ♂ pull. ,, May 22, 1904.

The nestling is a little rufous bird, with a sooty-black head and under surface, lighter and somewhat greyer on the abdomen.

38. ELMINIA LONGICAUDA.

Elminia longicauda (Swains.); Sharpe, Ibis, 1904, p. 631.

No. 644. ♀ ad. River Ja, June 8, 1904. Ovary small.

Nos. 685, 686. ♂ ad., ♀ pull. River Ja, June 15, 1904.

The nestling is very interesting. It is nearly like the adults, but of a more greyish blue, mottled with sandy-buff edges to the feathers. The under surface is greyish, with a white abdomen and under tail-coverts, but with no blue on the throat and chest.

39. Bleda simplex.

Bleda simplex (Temm.); Sharpe, Ibis, 1904, p. 632.

Phyllastrephus simplex Reichenow, Vög. Afrikas, iii. p. 393 (1904).

No. 495. ♀ ad. River Ja, May 14, 1904.
No. 539. ♂ ad. „ May 20, 1904.

40. Bleda flavigula.

Bleda flavigula (Cab.), Sharpe, Hand-l. B. iii. p. 320 (1901).

Phyllastrephus flavigula Reichenow, Vög. Afrikas, iii. p. 395 (1904).

No. 620. ♂ ad. River Ja, June 3, 1904.
Nos. 655, 656. ♂ ♀ ad. River Ja, June 9, 1904.

41. Bleda syndactyla.

Bleda syndactyla (Sw.); Sharpe, Ibis, 1904, p. 633; Reichenow, Vög. Afrikas, iii. p. 386 (1904).

No. 633. ♂ ad. River Ja, June 6, 1904.

42. Bleda batesi.

Bleda batesi Sharpe; id. Ibis, 1904, p. 634.

No. 714. ♂ ad. River Ja, June 23, 1904. Testes rather small.

Remains of dusky tips are seen on the outer tail-feathers, one of which is also dusky along the inner webs.

43. Bleda notata.

Bleda notata (Cass.); Sharpe, Ibis, 1904, p. 635; Reichenow, Vög. Afrikas, iii. p. 385.

No. 552. ♀. River Ja, May 21, 1904.
No. 566. ♂. „ May 24, 1904.
Nos. 613, 646. ♀ ♂. River Ja, June 2, 8, 1904.

44. Bleda leucopleura.

Bleda leucopleura (Cass.); Sharpe, Ibis, 1904, p. 635.

Phyllatrophus leucopleurus Reichenow, Vög. Afrikas, iii. p. 398 (1904).

No. 535. ♂ ad. River Ja, May 20, 1904. Testes rather large.

Nos. 583, 584. ♀ ♂. River Ja, May 26, 1904.

Nos. 661, 662. ♂ ad., ♀ imm. River Ja, June 10, 1904.

45. IXONOTUS GUTTATUS.

Ixonotus guttatus J. & E. Verr.; Sharpe, Ibis, 1904, p. 638; Reichenow, Vög. Afrikas, iii. p. 416.

No. 697. ♀ ad. River Ja, June 17, 1904. Eggs forming in the ovary.

46. PYCNONOTUS GABONENSIS.

Pycnonotus gabonensis Sharpe; id. Ibis, 1904, p. 638.

No. 722. ♀ ad. River Ja, June 24, 1904. Ovary small.

47. PYCNONOTUS VIRESCENTIOR.

Pycnonotus virescentior Sharpe, Ibis, 1904, p. 638.

No. 499. ♂ ad. River Ja, May 16, 1904.

Nos. 543, 546. ♂ ♀ ad. River Ja, May 21, 1904.

48. EURILLAS EFULENENSIS.

Eurillas efulenensis Sharpe, Ibis, 1904, p. 636.

No. 489. ♀ juv. River Ja, May 13, 1904.

49. EURILLAS VIRENS.

Eurillas virens (Cab.); Sharpe, Ibis, 1904, p. 635.

No. 481. ♂ ad. River Ja, May 13, 1904.
No. 534. ♀ ad. ,, May 20, 1904.
No. 719. ♂ ad. ,, June 23, 1904.

50. EURILLAS GRACILIS.

Eurillas gracilis (Cab.); Sharpe, Ibis, 1904, p. 635.

No. 467. ♀. River Ja, May 10, 1904. "Eya Ôtok."

51. GEOCICHLA CAMARONENSIS, sp. n.

G. supra rufescens, dorso imo et uropygio castaneis, notæo reliquo haud concoloribus, pileo brunnescentiore; loris et facie laterali cum gastræo toto aurantiaco-castaneis; macula auriculari nigra; subcaudalibus albicantibus, medialiter brunnescentibus; tectricibus alarum majoribus macula apicali alba magna ornatis. Long. tot. 7·0 poll., culm. 0·75, alæ 3·8, caudæ 2·35, tarsi 1·05.

No. 225. ♂ ad. Efulen, Nov. 5, 1903.

This Ground-Thrush is of the same group as *G. princei* and *G. compsonota*, but differs from them both, at a glance, by its orange-chestnut throat and under surface.

52. MERULA SATURATA.

Merula saturata (Cab.); Sharpe, Hand-l. B. iv. p. 128 (1903).

a. ♂ ad. Efulen, May 29, 1902.
b. ♀ ad. ,, Nov. 31, 1902.
No. 69. ♀ ad. River Ja, Feb. 1903.
No. 446. ♂ ad. Efulen, April 13, 1904.

The specimen from the River Ja is more like the typical *M. saturata* than birds from Efulen, which are slightly paler and shew a likeness to *M. pelios*.

[This Thrush is never found in the forest. It seeks its food on the ground in the plantations, and in bushes and trees as well. It generally keeps out of sight and moves cautiously, its yellow bill being often the only part that can be seen. It is almost the only good songster in the country. Its song is rich and varied and freely uttered, especially early and late in the day. It seems to mimic other birds, though it has many notes of its own.]

53. CALLENE CYORNITHOPSIS.

Callene cyornithopsis Sharpe; id. Hand-l. B. iv. p. 159 (1903).

No. 231. ♂ ad. Efulen, March 27, 1902.
a. ♀ ad. Efulen, Jan. 1, 1903. "Akalat."
No. 39. ♀ juv. River Ja, Feb. 1903.
Nos. 52, 57. ♂ ♀ ad. River Ja, Feb. 1903.
No. 231. ♂ ad. Efulen, Nov. 8, 1903.
No. 315. ♂ ad. River Ja, Dec. 28, 1903.
No. 320. ♂ ad. ,, Dec. 30, 1903.
No. 325. ♀ ad. ,, Dec. 31, 1903.
No. 488. ♀ ad. ,, May 13, 1904.
No. 669. ♀ ad. ,, June 12, 1904.

The sexes seem to be alike in colour and size, the wing being about 2·8 inches in length in both males and females. One male bird, however, shot on the 27th of March has a wing of 3·0 inches. An immature bird from the River Ja is paler rufous on the throat, and has orange-rufous spots on the wing-coverts.

54. Cossypha cyanocampter.

Cossypha cyanocampter (Bp.): Sharpe, Hand-l. B. iv. p. 163 (1903).

a. ♀ ad. Efulen, June 3, 1902.
No. 47. ♂ ad. River Ja, Feb. 1903.
No. 266. ♂ ad. " Dec. 16, 1903.
No. 306. ♂ ad. " Dec. 26, 1903.
No. 327. ♂ ad. " Jan. 1, 1904.
No. 500. ♀ ad. " May 16, 1904.
No. 536. ♂ ad. " May 20, 1904.
No. 545. ♂ ad. } River Ja, May 21, 1904.
Nos. 574, 548. ♂ ♀ ad. }
Nos. 560. ♂: 576, 598, 607. ♀ ad. River Ja, May 23–31, 1904.
Nos. 650, 667. ♂ ♀ ad. River Ja, June 8, 11, 1904.

This seems to be nearest to the true *C. cyanocampter* from the Gold Coast; it is not the dark Gaboon form, *C. periculosa*. Prof. Reichenow also has identified the Camaroon bird with *C. cyanocampter*.

The Camaroon birds seem to be somewhat intermediate in tint between *C. periculosa* and *C. barthelotti* of Shelley; they are not so chestnut below nor so pale orange-buff as the latter, but they seem to be a little more orange and not so ferruginous on the throat and breast.

[No bird is more interesting to me than the *angókón*. It is very secretive, and I have never seen it alive, at large. It lives only about villages, on the ground in the thick underbush; in such places all my specimens have been trapped by boys. It feeds on insects found on the ground.

But though I have not seen the *angókón*, I know its voice, which is wonderfully sweet. Its notes are strange and varied, with a weird quality that affects the imagination as unearthly. One brought to me alive made plaintive cries in the same strange sweet tone. According to the natives, this bird also imitates the notes of other birds.]

55. NEOCOSSYPHUS POENSIS.

Neocossyphus poensis (Strickl.); Sharpe, Ibis, 1902, p. 95 id. Hand-l. B. iv. p. 166 (1903).

a. ♂ ad. Efulen, July 11, 1901.
b. ♂ ad. 25 miles from Batanga, Dec. 5, 1901. "Ekwalat."
c. ♀ ad. Efulen, Jan. 3, 1902.
d. ♂ ad. ,, June 3, 1902.
e. No. 230. ,, Nov. 8, 1902.
f. ♀ ad. ,, Dec, 31, 1902.
g. No. 105. Ad. Efulen, March 27, 1903.
h, i. Nos. 115, 123. ♂ ♀. Efulen, April 2–10, 1903.
j. No. 305. ♂ ad. River Ja, Dec. 26, 1903.
k. No. 230. ♂ ad. Efulen, Nov. 8, 1903.
l. No. 305. ♂ ad. River Ja, Dec. 26, 1903.
m. No. 556. ♀ ad. ,, May 23, 1904.
n. No. 577. ♂ ad. ,, May 25, 1904.

The sexes seem to be perfectly alike, and the young birds, if there are any in the series, shew no spots on the plumage. This species appears to moult at different periods, as specimens are moulting in July and December.

This series, collected in all months of the year, shews remarkably little variation in colour, nor can I detect any sign of a spotted plumage in any of the specimens. In some the flanks are of a deep chestnut-maroon, contrasting with the cinnamon abdomen, but in others there is scarcely any perceptible difference of tint. Nor do the sexes seem to vary.

[The *ékwalat* is a ground-bird of the forest. It does not join with other forest-birds to feed in the *éjak*.]

56. STIPHRORNIS GABONENSIS.

Stiphrornis gabonensis Sharpe, Cat. B. vii. p. 173, pl. vi. fig. 1 (1883).

a, b. ♂ ad. Efulen, July 11, 27, 1901.
c. ♀ ad. ,, Dec. 28, 1901.
d. ♂ ad. ,, Jan. 2, 1902.
e. ♀ ad. ,, Jan. 1, 1903. "Akalat."

No. 94. ♂ imm.; Nos. 95, 97. ♀ ad. Efulen, March 21, 23, 1903.

Nos. 97, 100, 103. ♂ ad., ♀ imm. Efulen, March 24, 27, 1903.

Nos. 214, 216. ♂ ad., ♀ juv. Efulen, Nov. 1, 1903.

No. 703. ♂ ad. River Ja, June 17, 1904.

Specimens killed at different times of the year seem to vary very little as regards colour, the sexes being practically alike, with a little more or less olive on the upper parts. Young birds in March have orange spots on the wing-coverts, whitish throats, and a pale orange lower throat and fore-neck. It is rather curious that this species should also occur on the River Ja.

57. STIPHRORNIS XANTHOGASTER. (Plate IX.)

Stiphrornis xanthogaster Sharpe, Bull. B. O. C. xiv. p. 19 (1903).

No. 50. Juv.; No. 62. ♂ ad. River Ja, Feb. 1902.

Nos. 518, 526. ♂ ♀ ad. River Ja, May 17, 18, 1904.

This species is easily distinguished from *S. gabonensis* by its sulphur-yellow breast and abdomen, the tint being a little paler in the young bird.

[To be continued.]

XXX.—*Anniversary Meeting of the British Ornithologists' Union*, 1905.

THE Annual Meeting of the British Ornithologists' Union for this year was held on May 24th. In the absence of the President, who was abroad, the Chair was taken by Dr. P. L. Sclater, F.R.S.

The Minutes of the last Annual Meeting were read and confirmed.

The Report of the Committee announced the continued prosperity of the Union during the past year, both as to Membership and as regards its finances.

The volume of 'The Ibis' for 1904 was the fourth of the eighth series, under the joint Editorship of Mr. P. L. Sclater, D.Sc., F.R.S., and Mr. A. H. Evans, M.A. It contained 701 pages, and was illustrated with 11 coloured plates and 1 uncoloured plate.

With much regret the Committee reported the deaths of six Ordinary Members of the Union:—Mr. Frederick O. Pickard-Cambridge, Lt.-Col. L. Howard Irby, Mr. J. A. Luttman-Johnson, Col. P. W. L'Estrange, Mr. Edward Neale, and Mr. Edward Cavendish Taylor.

Three Members had resigned since the last Annual Meeting and the names of two others had been removed.

At the date of the Meeting the Union consisted of 395 Ordinary Members, 2 Extra-Ordinary Members, 10 Honorary Members, 4 Colonial Members, and 19 Foreign Members.

The Report having been received, the Meeting proceeded to elect officers for the ensuing year, when it was announced that Dr. F. DuCane Godman, F.R.S., had been re-elected President, and Mr. Howard Saunders, Secretary; also that Mr. Henry E. Dresser had been elected a Member of the Committee in the place of Mr. W. E. de Winton, who had retired by rotation.

The following twenty-two gentlemen were then ballotted for and elected Ordinary Members:—H. Peters Bone, 24 Devonshire Place, W.; Anthony Buxton, Knighton, Buckhurst Hill; Lt.-Col. A. Collins, C.B., M.V.O., Cow Leaze, Hayling Island; Kenneth J. A. Davis, Julian Hill, Harrow, and King's College, Cambridge; The Hon. and Rev. Canon F. G. Dutton, Bibury, Fairford; Guy L'Estrange Ewen, St. James's Club, Piccadilly (King's Messenger); Leonard E. Goodyer, 9 Clare Road, Levenshulme, Manchester; John Clarke Hawkshaw, M.A., M.I.C.E., Hollycombe, Liphook, Hants; Capt. Albert E. Hamerton, R.A.M.C., D.S.O., Ferozepur, Punjab, India; Frederick W. Headley, Haileybury College, Herts; Carl E. Hellmayr, Zoological Museum, Tring, Herts; Emilin Hopkinson, M.B., D.S.O., 45 Sussex Square, Brighton; Edwin J. Johnstone, Junior Carlton Club, S.W.; The Hon. Gerald Legge, 10 Charles Street, Berkeley Square, W.; H. Boughton Leigh, Brownsover Hall, Rugby; Hofrath Paul Leverkühn, M.D., The Palace, Sofia, Bulgaria; The Lord Lovat, C.B., C.V.O., D.S.O., Beaufort Castle, Beauly, N.B.; James McGregor, H.B.M. Consul, Monastir, Turkey-in-Europe; Thomas Middlemore, Melsetter, Orkney; Capt. A. E. St. Vincent Pollard, Border Regt., Royal Military College, Camberley, Surrey; Harold Schwann, 4 Princes Gardens, S.W., and Lionel E. Taylor, Irene District, Pretoria, Transvaal.

Mr. John Macoun, M.A., F.R.S.C., Naturalist to the Geological Survey of Canada, Ottawa, and Mr. Alfred D. Millar, 298 Smith Street, Durban, Natal, were elected Colonial Members; and Mr. Harry C. Oberholser, of the Biological Survey, Department of Agriculture, Washington, D.C., was elected a Foreign Member.

After a vote of thanks to the Council of the Zoological Society of London for the use of their rooms had been unanimously agreed to, the Meeting adjourned.

XXXI.—*Notices of recent Ornithological Publications.*

[Continued from p. 286.]

60. *Alphéraky on Palæarctic Geese.*

[The Geese of Europe and Asia, being the Description of most of the Old World Species. By Sergius Alphéraky. With Twenty-four coloured Plates by F. W. Frohawk, and Frontispiece by Dr. P. P. Sushkin. 4to. 198 pp. London: Rowland Ward, Ltd., 1905. Price £3 3s.]

This translation of M. Alphéraky's "*Gusi Rossii*," published in Russia in 1904, will be very acceptable to the many students of Palæarctic birds who are not able to comprehend the language in which the original was issued.

M. Alphéraky's general arrangement of the Palæarctic Geese does not deviate much from that of Count Salvadori published in the twenty-seventh volume of the 'Catalogue of Birds.' But he uses many more generic names and introduces us to several species not generally recognised.

The series is commenced with the Snow-Geese (*Chen*), of which two Palæarctic species (*Chen nivalis* and *C. hyperboreus*), differing only in size, are somewhat doubtfully allowed. Then follows the Emperor Goose (*Philacte canagica*), well known in Alaska, which occurs in the extreme east of Northern Asia. The genus *Anser* comes next; but this term is confined to the Grey-Lag and two White-fronted Geese, while the rest of the species generally referred to *Anser* are placed in Buturlin's new genus "*Melanonyx*," instituted in 1901. Amongst these are three species—*M. neglectus, M. carneirostris,* and *M. mentalis*—which seem to require further study and confirmation. Altogether eight species and subspecies are assigned to *Melanonyx*, while the Bar-headed Goose (*Anser indicus*) is isolated as *Eulabeia.* We cannot say that, in our opinion, sufficient reasons are given for thus separating the genus *Anser* into several genera.

The Brents and Bernacles, which appear to form a very natural group, are treated in a similar way, and subdivided into four genera—*Rufibranta, Branta, Leucoblepharon,* and *Leucopareia*; while the series terminates with *Cygnopsis,* which certainly has some claims to stand apart, though we should consider its affinities to be rather with *Anser* than with the Bernacles.

Although the multiplication of generic terms which M. Alphéraky indulges in is, in our opinion, objectionable, it must not be supposed that we in any way condemn the whole work. The subject is evidently quite familiar to the author, and under the head of every species and subspecies a fund of information is afforded, much of which will be new to most ornithologists. It is, however, admitted in the Preface that, in spite of the large amount of material investigated and the mass of literature studied, so many questions are left open that the present work can only be regarded as a "preparation for future investigation," which it will, no doubt, greatly stimulate.

The value of this work is further increased by the excellent series of plates drawn by Mr. Frohawk.

61. '*Annals of Scottish Natural History.*'

[The Annals of Scottish Natural History. Nos. 53 & 54. January and April 1905.]

The principal ornithological feature of these two Numbers is the valuable paper (in two instalments) by Mr. W. Eagle Clarke, on the Birds of the Flannan Islands, or Seven

Hunters. Lying more than twenty miles west of the Island of Lewis, and forty miles to the north-east of St. Kilda, these remote and uninhabited islets have rarely been visited, even by naturalists, and Mr. Harvie-Brown's pioneer experiences in 1881 summed up our former knowledge of the fauna. In 1899, however, a lighthouse was completed on Eilean Mòr, the largest of the group, and thenceforth Mr. Harvie-Brown and Mr. Eagle Clarke regularly received schedules recording the occurrences of birds. These indicated that a stream of migration swept over the islands both in spring and autumn; for which reason Mr. Clarke and Mr. T. G. Laidlaw arranged to spend sixteen days on Eilean Mòr, from September 6th to 21st, in 1904. We have already been told of the remarkable acquisition of the Short-toed Lark (*cf. suprà*, p. 115) and of the abundance of Lapland Buntings; but now a detailed and very interesting list of some eighty species of birds is furnished. One feature noted was a migration of Jack Snipes in "vast packs," and, from evidence up to the present, it appears to have been unusual; the stay of the birds was for barely more than a day. For good or for evil—chiefly the latter—a good deal has been written about St. Kilda, but the first instalment (pp. 75–80) of Notes on the Birds of that group of islets promises well. These notes are compiled by the Rev. J. B. Mackenzie from memoranda made by his father, who lived in St. Kilda from 1829–1843, and took a great interest in birds. There is no new information at first hand about the Great Auk. Among the general notes is an interesting record by Mr. Eagle Clarke of the nesting of the Storm-Petrel on the Bass Rock, this being the first instance for the *east* side of the mainland of Great Britain. The occurrence was erroneously attributed to the Fork-tailed Petrel by the Rev. H. N. Bonar ('Field,' Nov. 19, 1904), and was received with deserved scepticism.—H. S.

62. '*The Auk.*'

[The Auk. A Quarterly Journal of Ornithology. Vol. xxii. Nos. 1 & 2, January and April 1905.]

The first paper in our contemporary is by Professor Wells

W. Cooke, and treats of the Routes of Bird-Migration with reference to Mexico and Texas, Florida and Yucatan, and some "inferential" routes. In this subject the author of the 'Report on Bird Migration in the Mississippi Valley' established a reputation some seventeen years ago. Naturally, however, its interest is mainly for American ornithologists, whereas students on this side of the water will also be attracted by Mr. Austin F. Clark's investigation (pp. 134–140) of the migration in the western Atlantic of such Waders as the American Golden Plover, Spotted Sandpiper, and Yellowshank. The facts adduced are of great interest and the questions still unsolved merit careful consideration. Mr. Ruthven Deane contributes letters, hitherto unpublished: one from Swainson to Audubon, one from the great ornithologist himself, and several to him from John James Abert. Deserving of attention is an article by Dr. Jonathan Dwight, Jr., on plumage-wear in its relation to pallid subspecies; and one of the author's pertinent remarks, or roasting and bleaching respectively, is that "no one would think of calling a sunburnt man a subspecies, but the sunburnt plumage of the breeding bird is a fair mark for subspecific description!" Mrs. Irene C. Wheelock gives her experiences on the regurgitative feeding of nestlings, and there is no lack of contentious matter in the seventeen pages devoted to the subject. Summer Birds in the Bahamas is the title of an interesting paper, accompanied by a map and photogravures, by Mr. Glover M. Allen. A residence in Montana has enabled a member of the B. O. U., Mr. E. S. Cameron, to give an admirable account of the nesting of the Golden Eagle on the scoriaceous rocks in the "bad lands." Photogravures shew the site of the nest, the contents, and the young up to the time that they are able to fly, with many details of the habits of the parent birds; in fact we do not remember to have read elsewhere such an attractive life-history of this fine Raptor. The pity is that in Montana the bird has been almost exterminated by poisoned carcases set for wolves and *coyotes*; and poison, we may remark, has been a very important cause of the approaching extinction of the Golden Eagle in Ireland.—H. S.

63. *Evans on the Birds of Cambridgeshire.*

[Handbook to the Natural History of Cambridgeshire. Edited by J. E. Marr, Sc.D., F.R.S., and A. E. Shipley, M.A., F.R.S. Cambridge: University Press, 1904. Sm. 8vo. 260 pp.]

This Handbook, prepared for the meeting of the British Association at Cambridge in 1904, was designed for the help of those who desired to make observations in the surrounding district. The names of the Editors are quite sufficient guarantee for the general accuracy of the various contributions which make up the work, some twenty in number.

The twenty-five pages which relate to the Birds of Cambridgeshire were written by Evans, who, after some short introductory remarks, comments on 14 species which have either been already exterminated within the area of the county or are now extremely rare. Savi's Warbler became extinct about 1849, but the Short-eared Owl and Montagu's Harrier still occasionally breed in the county, while the Bittern is a stray visitor. The Grey-Lag Goose, formerly an abundant breeder, has ceased to nest in the county since 1773, but both the Spotted and Baillon's Crakes have bred in Cambridgeshire more recently. The Bustard is now a *very* scarce straggler, though in 1856 one undoubtedly visited Burwell Fen, where the present President of the B.O.U. "saw it with his own eyes." The Ruff again, formerly so abundant, no longer breeds in Cambridgeshire, while the Black-tailed Godwit and the Black Tern must be placed in the same category.

To the remarks on the rarer species is added a full list of the recorded birds of Cambridgeshire, among which perhaps the most remarkable is the Black-browed Albatross (*Diomedea melanophrys*), an example of which was taken alive near Linton in 1897 (see 'Ibis,' 1897, p. 625).—P. L. S.

64. *Flower on the Zoological Gardens of Gizeh.*

[Government of Egypt, Public Works Department. Zoological Gardens, Gizeh, near Cairo. Report for the Year 1904 (Sixth Annual Report) by the Director. Cairo, 1905.]

Captain Flower's Report gives, as in former years, a very satisfactory account of the progress of this well-managed Institution. The visitors in 1904 were 64,711, and the receipts at the gates £E1388, shewing a considerable advance in both cases. Mammals are naturally the most prominent objects in the Gardens, but birds are also numerous. The three Shoe-bills (*Balæniceps rex*) are, we are told, still thriving.

Six additions are made to the list of birds "observed wild in the Gardens" given in former reports—namely, *Monticola cyanus*, *Muscicapa grisola*, *M. collaris*, *Coccothraustes vulgaris*, *Cypselus apus*, and *Caprimulgus europæus*.

65. *Hagmann on Brazilian Birds.*

[As Aves Brasilicas mencionadas e descriptas nas obras de Spix (1825), de Wied (1830-33), Burmeister (1854), e Pelzeln (1874), na sua nomenclatura scientifica actual. Chave synonymica organisada pelo Dr. G. Hagmann. Bol. Mus. Goeldi, iv. p. 198 (1904).]

After an explanatory Preface by Dr. Goeldi, Dr. Hagmann gives the names of the birds described in the four principal works on Brazilian Ornithology (those of Spix, Neuwied, Burmeister, and v. Pelzeln), together with the corresponding names employed in the British Museum Catalogue for each of the species. These, as a rule, appear to be correctly stated, and the result cannot fail to be useful to students of the birds of Brazil.

66. *Huber on the Nest of* Ostinops decumanus.

[Ainda à proposito dos ninhos do Japu. Dr. J. Huber. Bol. Mus. Goeldi, iv. p. 471 (1904).]

This is a further contribution to the controversy on the question of what materials the nests of the Japu (*Ostinops decumanus*) are made (see 'Ibis,' 1903, p. 633, and 1904, p. 155). It does not, however, appear to alter materially the results already arrived at in the previous papers on this subject.

67. *'Irish Naturalist.'*

[The Irish Naturalist. A Monthly Journal of General Irish Natural History. Vol. xiii. Nos. 1–12 (1904). Eason & Sons, Dublin.]

Among the notes on ornithology may be mentioned

Mr. D. C. Campbell's account of the Dunlin, a species which nests in far greater abundance in the north-west of Ireland than is generally supposed. There are several records of the visits of Waxwings to Ulster; four Snow-Geese were noticed on the Moy in February—survivors, perhaps, of those previously seen in Co. Longford and Co. Mayo; and a second Irish example of the Little Crake was obtained in Co. Kildare. Mr. Ussher's paper on the birds of the Shannon valley is supplemented by some notes from the Lough Derg portion by Mr. Anthony Parker, who recently found the Garden-Warbler nesting there. An occurrence of the Stone-Curlew—a rare bird for Ireland—is recorded; a female Turtle-Dove was shot with eggs in her ovary, the nearest approach to breeding in the sister island for more than half a century, while only two instances are reported in all.—H. S.

68. *Lameere on Sexual Ornaments in Birds.*

[L'évolution des Ornements Sexuels. Par Aug. Lameere. Bull. Ac. Belgique, 1904, pp. 1327–1364.]

This paper sets forth arguments, based chiefly on birds and insects, against Darwin's views on Sexual Selection, coupled with those of Wallace. The author considers that all selection is "Natural," and that the aim of secondary sexual characters is utility in some form, whether for protective purposes, use in combat with foes, or stirring up the passions of the female. These sexual characters are often most pronounced in the early stages of the development of a species, males and females becoming more alike later. If the selection was "sexual," this would hardly be the case, nor would the females, with individually different ideas of beauty, be certain to choose the male most calculated to ensure the survival of the fittest.

69. *Leverkühn on the three Naumanns and their Works.*

[Biographisches über die drei Naumanns, und Bibliographisches über Ihre Werke, nebst den Vorreden zur zweite Auflage der Naturgeschichte der Vögel Deutschlands. Bearbeitet von Paul Leverkühn. Mit 8 nur für diesen Sonderabdruck hergestellten Tafeln. Gera-Untermhaus: Köthen, 1904.]

This, if we understand rightly, is a reprint of the Preface to the first volume of the new edition of Naumann's 'Vögel Deutschlands,' which was commenced in 1897, and has lately been brought to a conclusion under the title 'Naturgeschichte der Vögel Mittel-Europas.' The Editor of the new edition is Dr. Hennicke, of Gera, who has been assisted in his long and arduous task by many of the leading German ornithologists. We have already noticed ('Ibis,' 1904, p. 146) a valuable contribution of Dr. W. Blasius to this great work. Dr. Leverkühn's Preface is mainly of a historical nature, and contains amongst much other information a genealogical tree of the Naumann family, which shews plainly how the three ornithologists, Johann Andreas Naumann, Johann Friedrich Naumann, and Carl Andreas Naumann, were related, and gives many particulars about their lives and pursuits.

Eight plates prepared specially for this reprint illustrate the quaint personality of the Naumanns, and represent the "Denkmal" recently put up in Köthen as a memorial of them.

70. *Lönnberg on Birds from Tianshan.*

[Short Notes on a Collection of Birds from Tianshan. By Einar Lönnberg. With 1 plate. Arch. f. Zool. ii. No. 9. Upsala, 1905.]

The district of Tianshan in Central Asia has not been much worked by Western ornithologists, and Dr. Lönnberg is to be congratulated on having secured a series embracing examples of 79 species from that quarter. The exact locality of the collection is stated to be "Baimgol, which is on a tributary of the River Tekes *, and the mountain Chatengri." The list for the most part contains the names of well-known species, but will be useful to students of distribution. *Falco subbuteo cyanescens* is a new subspecies of Hobby, and *Lyrurus tetrix mongolicus* a new subspecies of the Black Grouse. The chick of *Tetraogallus himalayensis* is well figured.

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* The River Tekes is a branch of the Ili, which flows into Lake Balkash. It is in Chinese Turkestan.

71. *North on a new Genus of Passerine Birds.*

[Insectivorous Birds. A new Genus of the Order Passeres. By Alfred J. North. Agr. Gaz. of New South Wales, xvi. p. 247 (March 1905).]

The proposed new genus *Oreoscopus* is based upon the *Sericornis gutturalis* of De Vis (Pr. R. Soc. Queensl. vi. p. 244, 1889), which Mr. North regards as quite different from the typical form of that genus. He likewise describes the nest and eggs from specimens lately received by the Australian Museum from N.E. Queensland. Text-figures are given of the bird and the nest.

72. *Oberholser on a new* Sylviella.

[Description of a new *Sylviella*. By Henry C. Oberholser. Smiths. Misc. Coll. ii. p. 373.]

The "new subspecies," called "*Sylviella rufescens ochrocara*," is based on a specimen from Damaraland obtained by C. J. Anderson (corr. C. J. Andersson?), now in the U.S. National Museum. Is not this *Sylviella pallida* Alexander ('Ibis,' 1900, p. 71, pl. i. fig. 1)?—at any rate, that species, which was discovered by Capt. Alexander on the Upper Zambesi, should have been referred to.

73. *Ogilvie-Grant's Guide to the Bird-Gallery of the British Museum.*

[Guide to the Gallery of Birds in the Department of Zoology of the British Museum (Natural History). (With 24 Plates and 7 Illustrations.) London: Printed by Order of the Trustees, 1905. 1 vol. 4to. 228 pp.]

There is no doubt, we believe, that the series of specimens of Birds mounted for public exhibition in the British Museum at South Kensington is unrivalled in extent and variety. That of the Museum für Naturkunde in Berlin is also excellent, but as regards the number and rarity of its contents must yield to its rival in this country. Though the work of completing the series and of replacing the older specimens is still going on, the general arrangement of the Bird-gallery at South Kensington has been practically finished for some time, and a "Guide" to its contents was much called for. To no one could the task of compiling such a Guide have been better assigned than to Mr. W. R. Ogilvie-Grant, the Member of the Zoological Department who "carried out the arrangement of the Gallery in its present form."

Entering the Bird-gallery from the Great Hall the visitor will find the lowest forms of bird-life exhibited on the right-hand side, and the highest on the left, so that he may begin either at the bottom of the series and go upwards, or at the top of the series and pass downwards, as he pleases.

The "Guide" takes the former route, and, commencing with the lowest members of the Avian series, proceeds upwards through each of the 31 Orders and 147 Families into which the Class of Birds is divided, and ends with the "Passeriformes," which is the highest and most specialized Order of the whole Class. The specimens exhibited are lodged in 83 cases, and are labelled with numbers from 1 to 2810. The corresponding numbers in the "Guide" are printed in large black type, so that there is no difficulty in referring to them. The letterpress of the "Guide" will be found to contain not only remarks on the essential characters of the birds referred to, but also information as to their habits, distribution, nests, eggs, and other particulars. Thus, as the series of specimens is very nearly complete, we have in the "Guide" a well-written and popular history of the whole Class of Birds carefully brought together from different authorities. To say that such a compilation of all the principal facts known concerning the enormous Class of Birds, which numbers some 13,000 or 14,000 species, is free from errors would, of course, not be true, but as we turn over the pages of the "Guide" we are able to notice but few mistakes, and these mostly of a trivial character. On the whole, we may well congratulate the author on having produced a very useful piece of work which shews a wide acquaintance with every part of his subject.

After the description of the specimens exhibited in the systematic series in the Bird-gallery, which is illustrated by 23 photographic plates prepared by the skilful hands of Mr. R. B. Lodge, and occupies 136 pages, comes a description of the well-known and much-admired series of mounted groups of British Birds and their nests. These are already 159 in number, and are constantly receiving fresh accessions. Owing to want of space it has not been found possible to arrange them in exact scientific order, but they are numbered consecutively, and are described in the "Guide" under corresponding numbers. We need not enlarge upon the charms of this portion of the collection, which is well known to all lovers of Bird-life that visit the building in South Kensington, and is certainly that part most appreciated by the general public.

In concluding our notice of this work we must express our regret that it was thought necessary to issue it in so large a size. A quarto volume of any bulk is an awkward thing to hold in the hand, especially when walking about a gallery in order to examine the objects described. When a second edition is called for we hope that it will be found possible to print it in octavo, in correspondence with some of the other "Guides" recently issued, even if this should somewhat diminish the effect of Mr. Lodge's illustrative plates.

74. *Oustalet on the Birds of Cambogia, Laos, Annam, and Tonquin.*

[Les Oiseaux du Cambodge, du Laos, de l'Annam et du Tonquin. Nouv. Arch. d. Mus. d'Hist. Nat. sér. 4, t. v. (1904).]

We have now received the second portion of M. Oustalet's account of the birds of the French territories in Indo-China, which completes this useful piece of work (*cf.* 'Ibis,' 1900, p. 557). In the first half of the memoir 78 species were recorded from these countries, in the second half we find 107 noticed, making together a total of 185. No new species are described in the present section, which relates mostly to the Passeres. Coloured figures are given of *Pitta annamensis, Dryonastes maesi,* and *D. lugens.*

75. *Picchi on a Collection of Italian Birds.*

[Elenco degli Uccelli conservati nella sua Collezione Ornitologica Italiana al 29 Febbraio 1904, con notizie intorno alla Distribuzione e

Nidificazione in Italia. Per Cecilia Picchi. Ornis, xii. (1903-1904) pp. 381-562.]

This extract from our contemporary consists of a full list of the author's collection, with notes on the distribution and nesting of the birds in Italy and its islands, dates of capture, and native names. It will be found useful as a guide by any naturalist who intends to visit the country.

76. *Picchi on Heterochroism.*

[Picchi, Cecilia. Anomalie nel colorito del plumaggio osservato in 85 individui della mia collezione ornitologica Italiana, e breve cenno sull' eterocrossi. Avicula, vii. & viii. Siena, 1904. 35 pp.]

This is an essay on heterochroism or variations in colour in the plumage of birds, of which the author appears to be a careful student. It is accompanied by a description of the variations in 85 specimens of 61 species.

77. *Poche on Moehring's 'Genera of Birds.'*

[Ein bisher nicht berücksichtiges zoologisches Werk aus dem Jahre 1758, in dem die Grunsätze der binären Nomenklatur befolgt sind. Von Franz Poche, Berlin. Zool. Anz. xxvii. pp. 495 (1904).]

Moehring's original edition of his 'Avium Genera,' published at Bremen in 1752, is universally allowed to be pre-Linnæan and outside the pale of binomial nomenclature. But Herr Poche, who appears to be an ardent supporter of the new school of unlimited priority, has discovered that a Dutch edition of Moehring's 'Genera' (edited by Nozeman and Vossmaer) was published at Amsterdam in 1758, which, in Herr Poche's opinion, brings that work within the scope of the binomial system. To those who (like ourselves) take Linnæus's *twelfth* edition of the 'Systema Naturæ' as the proper date of the commencement of binomial nomenclature this is not of much consequence. But to those who begin with the tenth edition (1752) this is an awkward discovery, although we are of opinion that in this case, as in other similar resuscitations of long-forgotten works (of which one or two copies only are known to exist), the claims of priority should be absolutely ignored.

If Herr Poche's views were adopted a large number of changes in the names of our most familiar birds would have to be made, amongst which we may specify the following:—

Names at present in use.	To be changed to Moehring's name.
Casuarius.	*Cela.*
Plotus.	*Ptynx.*
Phaëthon.	*Lepturus.*
Fregata.	*Atagen.*
Fratercula.	*Spheniscus.*
Balearica.	*Ciconia.*
Scolopax.	*Rusticula.*
Hiaticula.	*Squatarola.*
Calidris.	*Cinclus.*
Stercorarius.	*Buphagus.*
Didus.	*Raphus.*
Momotus.	*Merula.*
Ægithalus.	*Orites.*
Centropus.	*Nisus.*

But this is merely a sample of the confusion that would follow from the recognition of the Dutch edition of Moehring's 'Genera Avium' as valid in binomial nomenclature. A large number of well-known terms must, according to Herr Poche, be rejected as having been previously employed by Moehring in a different sense. For example, *Totanus, Bucco, Colius, Erithacus, Merula,* and *Buteo* must all be replaced by other names. For "*Pyrrhocorax*" the new generic term "*Hellmayria*" is proposed, as Moehring applied the former name to *Tchitrea paradisi*! We can really hardly believe that anyone, except those affected by *furor prioritatis* of the most serious character, will follow Herr Poche's lead in this matter.

78. *Richmond on the Birds described in Vroeg's Catalogue.*

[Notes on the Birds described by Pallas in the "Adumbratiuncula" of Vroeg's Catalogue. Smiths. Misc. Coll. ii. pt. 3, p. 342 (1905).]

In this paper Mr. Richmond endeavours to decipher the "Adumbratiunculæ" of Pallas attached to Adrian Vroeg's Sale-list of 1764 described below (p. 496), and to determine the correct names of the 38 species mentioned in them according to modern nomenclature. As Vroeg's Sale-list was not published until after the issue of the twelfth edition of Linnæus's 'Systema,' it follows that those who begin their nomenclature with that edition need not trouble themselves about the matter. But even those who, like Mr. Richmond, commence binomial terminology from 1758 should hesitate, we think, to follow his lead in accepting the validity of the names of Vroeg's Sale-list. There is no proof whatever that the "Adumbratiunculæ" were published at all; they are paged separately from the "Sale-list." All we know is that a printed copy of them is attached to Linnæus's copy of the Sale-list, and that it was probably sent to Linnæus by Pallas. But it is impossible to say whether the "Adumbratiunculæ" were issued along with other copies of the Sale-list, or were intended by the author for Linnæus's private use only. Therefore it would be unwise to supersede such well-known names as *Muscicapa grisola* by *Muscicapa striata*, and *Melizophilus undatus* by *Melizophilus cantillans*, &c., as suggested by Mr. Richmond.

79. *Ridgway on new Tropical-American Birds.*

[Descriptions of Seven new Species and Subspecies of Birds from Tropical America. By Robert Ridgway. Smiths. Misc. Coll. ii. p. 112 (1904).]

Diagnoses are given of seven new forms included in the fourth part of Mr. Ridgway's 'Birds of North and Middle America,' which is not yet published. They are termed *Myiadestes genibarbis cherriei* (Haiti); *Catharus fuscater sanctæ-martæ* (Santa Marta district); *Cichlherminia coryi* (probably Martinique); *Cinclocerthia ruficauda tenebrosa* (St. Vincent); *C. r. pavida* (Lesser Antilles); *Mimus gilvus guatemalensis* (Guatemala and Vera Cruz); and *M. g. tolimensis* (Tolima).

80. *Ridgway on the Birds of North and Middle America.*

[The Birds of North and Middle America. By Robert Ridgway. Bull. U.S. Nat. Mus. No. 50. Part III. Washington, 1904. 8vo. 801 pp.]

In the third volume of this important work Mr. Ridgway continues his account of the Oscines of North and Middle America, and treats of the birds of the families Motacillidæ, Hirundinidæ, Ampelidæ, Ptilogonatidæ, Dulidæ, Vireonidæ, Laniidæ, Corvidæ, Paridæ, Sittidæ, Certhiidæ, Troglodytidæ, Cinclidæ, Chamæidæ, and Sylviidæ. Most of these terms are familiar to us, but Dulidæ is a new family-name made for the reception of the peculiar type *Dulus* (or Palm-Chat) of the island of Haiti, which it is certainly not easy to fit in with any other known form. The "Ptilogonatidæ," as Mr. Ridgway calls them, are also separated from the Ampelidæ with which they have been hitherto associated. Mr. Ridgway writes of them as follows :—

"They are related to the Wax-wings (Ampelidæ) and have usually been placed with them, but they differ in their rounded wings with well-developed tenth and shortened ninth primaries, their well-developed rictal bristles, and the different character of the frontal feathers. Their habits, however, are said to be very similar." In the Ptilogonatidæ are placed the genera *Ptilogonys*, *Phainopepla*, and *Phainoptila*. But Mr. Ridgway is doubtful whether the last-named genus truly belongs to this group. "So far as the adult is concerned," he says, "it might easily be referred to the Turdidæ, but the young have the plumage absolutely plain-coloured and the acrotarsium distinctly scutellate."

The "Chamæidæ," consisting of the single genus *Chamæa*, is another example of a peculiar Oscinine Family of North America. The form has been placed sometimes with the Tits, sometimes with the Wrens. Mr. Ridgway now solves this uncertainty by attesting its full family-rank. Mr. Lucas, who has made a careful investigation of its osseous structure, has come to the conclusion that "in its cranial characters it is much like *Psaltriparus*, while the shoulder-girdle is slightly and the pelvic girdle decidedly Wren-like." "Wren-tit" is therefore a very appropriate name for this little bird, which has hitherto enjoyed the distinction of constituting the only Family of the Passerine Order peculiar to the Nearctic Region.

It was until lately supposed that there was only one form of *Chamæa* ; but the more acute eyes of modern observers have enabled them to separate the old *Chamæa fasciata* into four "subspecies," which are distributed over different districts of Western North America.

The characters of the new genera, species, and subspecies introduced in the present volume have been already published by Mr. Ridgway in the 'Proceedings of the Biological Society of Washington' for 1903 (see 'Ibis,' 1904, p. 301).

The number of species and subspecies treated in the present volume is about 450. Some 800 others have been described in the two previous volumes, and, according to the calculations made by the author, about 1875 species more remain. This would bring up the total number of species and subspecies of Birds in North and Middle America, according to Mr. Ridgway's estimate, to about 3125. We fear, therefore, that Mr. Ridgway has still a very heavy task before him. Although we may not agree with all the author's views on classification, we must all admire the thoroughness and accuracy of his work, and trust that it may be brought to an early conclusion.

81. *Rules of Zoological Nomenclature.*

[Règles Internationales de la Nomenclature Zoologique adoptées par les Congrès Internationaux de Zoologie. International Rules of Zoological Nomenclature. Internationale Regeln der zoologischen Nomenklatur. Paris: F. R. de Rudeval, 1905. 8vo. 64 pp.]

In the "Avant-Propos" of this Memoir, which is written in French, and is signed by Prof. Blanchard, the various steps taken by the Congress of Zoology for the preparation of the "International Rules of Zoological Nomenclature" are shortly but plainly set forth. The Committee on the subject was originally established at the Congress of Berlin in 1895, and the Code adopted was finally elaborated by MM. Blanchard (of Paris), von Maehrenthal (of Berlin), and Stiles (of Washington) at Berne, after the Congress held in that city in August 1904. After the Introduction follow the Rules in three languages—French, English, and German,—the first of the three texts being stated to be the most authoritative in case of any dispute.

We cannot criticize the Rules at length in this journal. Every zoologist should make himself acquainted with them, and must settle for himself how far he is disposed to obey them. We may, however, remark that it appears to us that far too much weight is allowed in them to the claims of "*Priority*," which is a doctrine much in fashion at the present time. "Priority" is an excellent thing and worthy of all due respect, but we do not see why it should supersede the rules of the Latin grammar, as would be the case if the new code were implicitly followed. Nor, in our opinion, should "Priority" be held sufficient to justify the usage of an obviously incorrect term, such as the application of the specific name "*capensis*" to a South-American bird. In such cases "Priority" should give way to Common Sense. A third point in which the claims of "Priority" should not be recognised is in the case in which the specific name of an animal has subsequently become also its generic name—especially now that subspecies are coming into more frequent use: "*Pica pica*" is bad, but *Pica pica pica*, *Coccothraustes coccothraustes coccothraustes*, and such alliterations are, in our opinion, very objectionable. It is far better to throw "Priority" aside in such cases, and to employ the next earliest name, as enacted in the original Stricklandian Code.

82. *Schalow on Arctic Birds.*

[Fauna Arctica. Die Vögel der Arktis. Von Herman Schalow, in Berlin. Jena: G. Fischer, 1904. Pp. 288.]

The Arctic Ornis is of special interest to us in England, as most of the birds in the List are also to be found, at least occasionally, in the British Islands. It is therefore with much pleasure that we receive a separate copy of "Die Vögel der Arktis," which forms part of the fourth volume of the 'Fauna Arctica,' now being prepared in Germany and edited by Dr. Römer and Dr. Schaudinn. The name of the author of the Birds of Arctis is a sufficient guarantee to us that this memoir has been carefully prepared and is well worthy of notice.

After a well-written Introduction, in which the whole subject is explained and discussed, we have a long chronological list of the literature of Arctic Birds, which begins with Martens in 1675 and ends with Proctor and Saunders in 1904. Omissions may be discovered in this, but it seems to be nearly complete and is followed by a very useful index, by which the special authorities on the different localities may be found without delay. This is followed by a nominal list of the species of the "North-Polar Ice-Sea" and its islands, and then by a discussion of the exact range and time of occurrence of the 270 species and subspecies attributed to it. Every species, whether it belongs to the Palæarctic or Nearctic Avifauna, is fully considered, and the authorities for its occurrence in Arctis are fully stated. We may regret that the author should call the Grebes "*Colymbus*" and misspell "*Otocorys*"; but such is the fashion of the day, and we submit to it with a slight murmur.

After the remarks on the species and subspecies, a list is given of those met with in each separate locality—Bear Island, Spitsbergen, Franz-Joseph Land, Nova Zembla, Kolguef, Dologol, Waigatsch, the New-Siberian Islands, &c., finishing with those of Greenland and Jan Mayen. This is likewise a very useful feature in the memoir, which we can commend to the attention of all those interested in Palæarctic Birds.

The final chapter of comparison between the Arctic Ornis and the Antarctic Ornis only serves to shew that they are quite different. It was until lately supposed that *Sterna macrura* was to be met with in both of them, but (alas!) the southern bird has recently been converted into a new "subspecies" *Sterna macrura antistropha*!

83. *Seabra on Birds from Angola.*

[(1) Mammiferos e Aves da Exploricão de F. Newton em Angola, por A. E. de Seabra. Jorn. de Scienc. Lisboa, ser. 2, tom. vii. p. 106. (1905).

(2) Aves de Angola de Exploricão de Francisco Newton. *Op. cit.* p. 118.]

The well-known explorer and collector Francis Newton has sent from Angola to the Museum of the Academia

Polytechnica of Oporto two collections of Birds, of which we have here the lists, with the localities at which the specimens were obtained and a few other notes. Twenty-one known species of birds are enumerated in the first paper, and forty-six in the second. The specimens were obtained mostly in the vicinity of Golungo Alto.

84. *Shelley's 'Birds of Africa.'*

[The Birds of Africa, comprising all the Species which occur in the Ethiopian Region. By G. E. Shelley, F.Z.S., F.R.G.S., &c. Vol. IV. pt. 1. London: Porter, 1905.]

In the last-published volume of 'Birds of Africa' (see 'Ibis,' 1902, p. 670) Capt. Shelley finished the Fringillidæ, except one species (*Linurgus concolor*), which heads the present contribution. The first part of the fourth volume is entirely devoted to the Weaver-birds (Ploceidæ), a numerous and important group in the Ethiopian Ornis. Capt. Shelley arranges them in three subfamilies—the Viduinæ, Estreldinæ, and Ploceinæ. The first two of these subfamilies are treated in the present volume—the Viduinæ containing 7 genera and 55 species, and the Estreldinæ 16 genera and 112 species.

One new genus is instituted, *Chorestrida*, for *Pytelia ansorgei* Hartert and *P. capistrata* Hartl. Seven coloured plates, drawn by Grönvold, ornament this handsome volume, and make us better acquainted with the following species:—*Pyromelana ladoensis, Coliuspasser soror, Urobrachya zanzibarica, U. affinis, Anomalospiza rendalli, Estrelda rhodopyga, E. vinacea, Coccopygia bocagei, Lagonosticta cinereo-vinacea, L. rhodoparia, Pytelia citerior, Pyrenestes minor, Cryptospiza jacksoni,* and *C. shelleyi.*

85. *Sherborn on the Birds of Vroeg's Catalogue.*

[The new Species of Birds in Vroeg's Catalogue, 1764. By C. Davies Sherborn. Smiths. Misc. Coll. ii. p. 334 (1905).]

In 1764 Adrian Vroeg printed at The Hague a sale-list of a collection of birds, of which the only existing copy known is in Linnæus's collection of books in the Library of the Linnean Society of London. This copy of the sale-list is accompanied by a separately paged portion called "Adumbratiunculæ," in which 38 new species of Birds are described in Latin. These new names were attributed by Mr. Sherborn in the 'Index Animalium' to Vroeg, but it has been lately shewn that the great Russian naturalist Pallas (then of the age of 23) was the author of them. Mr. Sherborn now reprints the "Adumbratiunculæ." They are, of course, of much interest, but those who (like ourselves) begin their binomial nomenclature with the 12th edition of the 'Systema Naturæ' (1760) will not adopt them as valid, even if they could be certainly referred to determinable species (see under "Richmond" above, p. 490).

86. *Shufeldt on Classification.*

An Arrangement of the Families and the higher Groups of Birds. By R. W. Shufeldt. Amer. Nat. xxxviii. pp 838 857, 6 figs.]

This contribution by Dr. Shufeldt to the study of taxonomy carries us through a series of Orders, Supersuborders, Suborders, and Superfamilies to the Families, after the author's well-known style. It is based on Palæontology, Comparative Morphology, Oology, and Nidification, not forgetting Pterylography, but does not differ strikingly from such classifications as that of Fürbringer, except that Dr. Shufeldt denies that birds can be divided into two subclasses.

87. *Stone on Birds from Mount Sanhedrin, California.*

[On a Collection of Birds and Mammals from Mount Sanhedrin, California. By Witmer Stone. With Field-notes by A. S. Bunnell. Proc. R. Acad. Sc. Phil., July 1904 (p. 576).]

The collection of Birds was made by Mr. Bunnell during two trips in the months of May, June, and July 1897 and in 1899, to Lierlie's Ranch, alt. 2100 feet, while Mount Sanhedrin rises to about 5000. It contains examples of 56 species, all of which may be regarded as breeding there, while 33 others are added from Mr. Bunnell's observation. *Calypte anna* and *Selasphorus alleni* were the only two

Humming-Birds met with, but both were "common." *Cathartes aura* was found "everywhere." Dippers (*Cinclus mexicanus*) were "very common." Of *Chamæa fasciata* a few were met with "in the bush."

88. *Van Oort on the Osteology of the Tail in Birds.*

[Beitrag zur Osteologie der Vogelschwanzes. Inaugural-Dissertation des philosophischen Fakultät des Universitat Bern zur Erlangung der Doctorwurde. By Dr. Eduard Daniël Van Oort in Leiden. 143 pp., 5 pls.]

We are glad to have an opportunity of noticing this careful paper by Dr. van Oort on the Osteology of the Tail in Birds, though it is impossible in our restricted space to do justice to the details, which must be left for study to the individual reader. Not only does the author give us the results of his own work upon the rich collection of skeletons in the Leyden Museum, but he also furnishes us with a compendium of the researches of former writers on the subject, and adds a discussion upon the relationships of the various families as shown by the formation of the tail, drawing conclusions favourable to the more modern Classifications. Special sections are devoted to fossil and to recent birds, Ratite and Carinate, to the embryo of certain species, to the rectrices, and so forth; while a table is given of the number of vertebræ in each family and in representative species. Moreover, we observe throughout statements of the number of rectrices, which we have often endeavoured (and failed) to find elsewhere in particular cases.

XXXII.—*Obituary.*

Edward Cavendish Taylor and Leonard Howard Irby.

Edward Cavendish Taylor, one of the original members of the British Ornithologists' Union, was born on the 20th of January, 1831, the third and youngest son of Frederic Farmer Taylor, of Chyknell in the county of Salop, by his marriage with Juliana, daughter of the second Lord Waterpark. He was educated at Rugby and Cambridge, and, after the usual course of theological study, took Holy Orders in the Church of England, and served as curate in several places, amongst which was Long Compton in Warwickshire. But Taylor was not thoroughly devoted to his profession, and when, in 1870, the Act was passed enabling clergymen of the Church of England to give up their Orders, he took early advantage of it and retired into lay life and the study of birds, in which he had always taken a great interest from his early youth. Taylor was a very accurate and painstaking observer, besides making excellent skins, and was a constant traveller. In the winter of 1853 he visited Egypt, and ascended the Nile up to the First Cataract, making a good collection of birds *en route.* In 1858, when this Union was founded he became one of its original members, and, though he was not present at the meeting at Cambridge in November, 1858, when 'The Ibis' was founded, he contributed an excellent article to the first number of this journal, which was published in January 1859.

Early in 1859 Taylor left England on an expedition to Tunis and Algeria, in company with Sclater and two other friends. The main object of the party was to visit the breeding-sites of the Vultures and Eagles in those countries, which had been so successfully explored by Salvin and Tristram in 1857, as is recorded in the first volume of this journal. No opportunity was lost by Taylor of adding to his cabinet of birds during this expedition. His next long journey was of a more adventurous character. Leaving England in December, 1872, he proceeded to the West Indies, and besides made excursions from Trinidad to the mainland of South America, visiting, amongst other places, the towns of Ciudad Bolivar and Caracas. Birds were studied and collected at all the places visited, and the general results of the expedition were given to the world in two articles published in 'The Ibis' in 1864. Examples of *Pitangus taylori*, a species of Tyrant-bird named by Sclater after his friend and companion, were first obtained on this occasion in Porto Rico, and serve to commemorate the name of its discoverer.

After 1860 Taylor's headquarters were always in London, where he had a set of rooms in Jermyn Street and was a member of several clubs. The winter-climate of London, however, did not suit his health, and the colder months of the year were usually passed in Italy, where he was quite at home both at Florence and Rome, and enjoyed the society of numerous friends. He also re-visited Egypt more than once, and never failed to give some account of his observations on birds made during these excursions to the Editors of 'The Ibis,' at the same time never omitting to add to his cabinet of birds. When in London in the summer he was a constant visitor to the Zoological Society's Library and Gardens, and to the Bird-room of the British Museum, always intent upon questions relating to the study of Birds. During the last part of his life Taylor's health unfortunately failed him, and he was not so much seen at his favourite places of resort. The end came somewhat suddenly, when he died in London on April 19th at the age of 73 years. By his will Taylor left his collection of birds and eggs to the British Museum, where it will prove to be a valuable accession, as several types are comprised in the series and the skins are all in excellent condition and labelled with well-established localities.

Taylor's collection contains 1226 specimens of birds and 860 of eggs, principally from the Palæarctic and Neotropical Regions. Amongst them are the types of *Pitangus taylori* and *Tyrannus rostratus*, both shot and skinned by himself.

The following is a list of the titles of Taylor's principal ornithological papers:—

1. Ornithological Reminiscences of Egypt. Ibis, 1859, p. 41.
2. Five Months in the West Indies. Part I.: Ibis, 1864, p. 73. Part II.: ibid. p. 157.
3. Egypt Revisited. Ibis, 1867, p. 48.
4. A few additional Notes on the Birds of Egypt. Ibis, 1878, p. 368.
5. Ornithological Notes from Egypt and Athens. Ibis, 1886, p. 378.
6. Ornithological Notes from Constantinople. By P. L. Sclater and E. C. Taylor. Ibis, 1876, p. 60.

7. A few Notes on the Birds of Egypt, from Observations made at Cairo in the Months of January and February 1896. Ibis, 1896, p. 477.
8. Notes on the Eggs of the Frigate Bird and Crocodile of Jamaica. P.Z.S. 1858, p. 318.

Besides these Taylor was the author of the following letters addressed to the Editors of this journal:—

On Egyptian Birds. Ibis, 1860, p. 199.
On the Occurrence of *Turtur risorius* in Europe. Ibis, 1864, p. 110.
On *Aquila culleni*. Ibis, 1880, p. 143.
On the Occurrence of *Coccyzus americanus* in Italy. Ibis, 1884, p. 114.
On *Coccyzus americanus* and *Porphyrio alleni* in Italy. Ibis, 1884, p. 214.
On Birds observed during a Visit to Egypt. Ibis, 1891, p. 473.
On the Crow of Somaliland. Ibis, 1891, p. 628.

Lieut.-Colonel **Leonard Howard Loyd Irby**, who died on May 14th, 1905, at 14 Cornwall Terrace, Regent's Park, N.W., was the fourth son of the late Rear-Admiral the Hon. Frederick Paul Irby, C.B., R.N., the second son of the second Lord Boston. He was born in 1836 and was educated at Rugby. On May 5th, 1854, he was gazetted as Ensign in the 90th Light Infantry, and six months later proceeded with it to the Crimea. He served at the siege of Sebastopol throughout the terrible winter of 1854–55, receiving the medal and clasp and Turkish medal, and was promoted Captain, February 24th, 1857. Two years later upon troops being dispatched to China, the 90th L.I. were ordered thither. Three companies—Capt. Garnet Wolseley's (now Field-Marshal Viscount Wolseley), Capt. Irby's, and another—sailed in H.M. Troopship 'Transit' on April 8th, 1857.

On the voyage out the vessel was wrecked in the Straits of Banca, near Sumatra, and became a total loss. The British soldiers were landed on a small island adjacent to the scene of the wreck, and after ten days the 'Dove' gunboat arrived, bringing the startling news of the great Sepoy Rebellion, and further orders that the 90th, in place of continuing the voyage to China, were to go to Calcutta. Thither the regiment proceeded, *viâ* Singapore, arriving on August 11th, 1857. From Calcutta they made a forced march of some 700 miles to Cawnpore, arriving there whilst evidences of the terrible massacre were yet visible on all sides. Here Irby came in for a great deal of fighting, his "record" including the relief of Lucknow under Lord Clyde, the defence of the Alum Bagh under Outram, and the siege and fall of Lucknow.

From his earliest days Irby had been profoundly interested in natural history and his diary of his voyage in the 'Transit,' and of the following months of incessant marching and fighting in India, is interspersed everywhere with entries relating to the birds and other animals which he had shot or seen.

Lord Wolseley, in his 'Story of a Soldier's Life,' makes frequent allusions to Irby's well-known tastes, and describes several amusing scenes which occurred. Thus, when on board the 'Transit,' Wolseley, who occupied a cabin along with Irby, writes: "A few days after we left the Cape, I remarked a horrible smell in our cabin, and upon sniffing about I found it came from the skin of a Wild Cat carefully pinned upon a board to dry. In my anger I threw it overboard . . . ."

Another entry is highly characteristic of Irby's ways. Lord Wolseley, describing the life at the Alum Bagh, says: "There were some jeels where my old chum Irby, an unerring shot, managed often to pick up a few Wild Duck. He had a curious soldier-servant whom he had trained as a retriever, and no matter how deep the water was where the duck fell, he quickly brought it to his master."

For his services in the Mutiny, Captain Irby received the medal with two clasps and was granted "a Year's Service." After the suppression of the Mutiny, he remained in India until his return to England in September 1860. On June 2nd, 1864, he was promoted to be Major in the 90th, and in October 1864 he exchanged into the 74th Highlanders. In 1868 he proceeded with his new Regiment to Gibraltar, and served there until February 4th, 1871, when he accepted promotion to a half-pay Lieut.-Colonelcy. Three years later he retired from the Service.

Irby's devotion to the study of Natural History never failed him, even in the most adverse circumstances. Before

Sebastopol he managed in brief intervals when off duty to shoot and skin a variety of birds at the head of Balaclava Harbour and other localities within the extremely limited region accessible to the British Army engaged in the siege. Visitors to his house will recall, among these, a Great White Heron and a Bittern obtained there. It can easily be imagined that India opened up a wide field for his energies and researches. It was not, however, until 1868, when he first went to Gibraltar, that he came across a field which he was destined to make largely his own. At this time our knowledge of the birds of the Spanish Peninsula was extremely limited, and what was then known was mainly due to Lord Lilford, who had visited the country on several occasions and had contributed papers on its birds to the 'Ibis' in 1865 and 1866. It was a happy chance that the two had been most intimate friends from pre-Crimean days in Dublin.

Major Irby now devoted much time to a thorough study of the birds of S.W. Andalucia and of the opposite coast of Barbary. He had, however, at this time, and indeed throughout his life, an invincible objection to publishing any account of his experiences, and it was largely due to Lord Lilford that he was at last induced to set about his book on the Ornithology of the Straits of Gibraltar, which, together with Lord Lilford's work, has formed the basis of nearly all the writings on the subject which have since appeared.

This book came out in 1875 and is full of valuable information, much of which was at the time entirely new, on the fauna of this region.

Colonel Irby was a man of marked individuality, and at all times most willing to give assistance and information to those whom he viewed as genuine students of Natural History, but he had an undisguised detestation of the race of "collectors" and wanton destroyers of bird-life. The present writer will never forget the outpour of indignation by Colonel Irby upon the owner of a private collection who exhibited with pride whole trays-full of Choughs' and Peregrines' eggs, in the collection of which entire districts had been mercilessly harried and the beautiful and harmless Chough practically exterminated—at least in one locality. Colonel Irby's wrath against such men was a thing not to be forgotten, and he always declaimed against the baneful habit of private collectors aiming at securing "British specimens" of birds or eggs.

Another characteristic trait of Colonel Irby was his strongly expressed contempt for that class of naturalists, unfortunately not infrequently met with nowadays, who appropriate the information obtained from others, usually of wider experience and knowledge, and embody the same in their writings and books without any acknowledgment.

It was this deep-seated feeling which in later years often made him loth to write on matters of unquestionable interest, especially to ornithologists, for he argued that to do so would be but to supply further material for unscrupulous book-makers!

It was whilst he was smarting under treatment of this sort, that Lord Lilford and the present writer were, happily, successful in inducing Colonel Irby to bring out an enlarged Second Edition of his admirable 'Ornithology of the Straits of Gibraltar.' Lord Lilford supplied the fine coloured plates which make so attractive a part of the book, while the present writer gave his own notes on Southern Spain, covering the period 1871–1894, as well as sundry illustrations, which were duly incorporated and acknowledged in the most generous manner. This work will probably remain the standard authority on the Birds of S.W. Andalucia for an indefinite time.

It has sometimes been said that Colonel Irby failed to record certain species which have since been proved to occur in the districts described. This is to some extent true, but is the best testimony to the accuracy and thoroughness of his work; for he would never admit species into his lists unless fully convinced personally as to their absolute authenticity. In sundry "Lists of Birds observed" published in recent years it would have been well if Colonel Irby's views on this point had been adopted. He never ceased to make scathing allusions to the marvellous powers claimed by some individuals "who profess to identify all and every species within the range of their vision, even to distinguish a Common from a Lesser Kestrel at any distance when seen from a passing train"!

An invaluable work to Students of Ornithology in these Islands is Colonel Irby's 'British Birds Key-List,' which he wrote in 1887–88, and a Second Edition of which appeared in 1892.

As is well known, he had exceptionally strong views on the subject of what he ever described as "the needless multiplication of species," and denounced the same in no uncertain language. Of this he once wrote:—"The unfortunate part of ornithology, as at the present practised, is that it is chiefly confined to the slaughter of birds, whose skins, when compared and examined by table naturalists, are, upon the slightest variation of plumage, made into a new species without any knowledge of their habits, notes, &c."

As a Member of the Zoological Society of London Irby took a keen interest in the management of the Gardens and served on the Council from 1892 to 1900. Many of the beautiful Life-groups of Birds and their nests at the British Museum of Natural History, Cromwell Road, were obtained by Colonel Irby, some of the earliest having been taken in 1884.

The present writer first made Colonel Irby's acquaintance when quartered at Gibraltar in May 1877, exactly twenty-eight years ago, and from that time, and indeed until within a few weeks of his decease, he made numerous expeditions with him in Southern Spain, as well as to many of the wilder portions of the British Isles. Added to his thorough acquaintance with all appertaining to bird-life, Colonel Irby had a considerable knowledge of Lepidopterous Insects and of Plants. A most interesting and amusing companion, he was also a warm-hearted and staunch friend, whose quaint habits and forcible sayings will long be remembered by all who knew him.

(Willoughby Verner.)

XXXIII.—*Notes and Extracts.*

Capt. Boyd Alexander's Expedition.—We have heard nothing direct from Capt. Alexander lately, but there is an account of his journey across Northern Nigeria from Loko on the Benué to Yo, near the shores of Lake Chad, in the 'Times' of May 11th last and in the June number of the 'Geographical Journal.' At the beginning of February Capt. Alexander was proposing to continue his transit of Africa by ascending the valley of the River Shari, and then striking across to Mahagi on the shore of Lake Albert. As his Portuguese collector is still with him, Capt. Alexander is sure to bring home a good series of birds, amongst which, as his route has not previously been traversed, there will be probably many novelties.

Mr. Bates's return to Camaroon.—Mr. George L. Bates, whose interesting field-notes on the birds of Cameroon we have published in connexion with Dr. Bowdler Sharpe's papers on his collections, returned from a holiday in the U.S. last month, and after a short stay in London left again for Camaroon to continue his researches in the Natural History of that German Colony. On this occasion Mr. Bates is accompanied by Robertson, lately in the Zoological Society's service, who will take charge of any Anthropoid Apes or other living animals that Mr. Bates may be able to obtain.

The Museum of the Academy of Natural Sciences of Philadelphia.—In the report of the Officers of the Academy of Natural Sciences of Philadelphia for 1904 we are pleased to see it announced by Mr. Witmer Stone, the Conservator of the "Ornithological Section," that the collections of the Academy "were never in better condition nor more accessible to the student than they are at present." Many additions have been made during the past year, amongst which is a series of 300 Philippine birds and collections from the West Indies, Colorado, and California.

As regards the scientific importance of this famous Museum, see our remarks in this Journal for 1899 (p. 654).

Can Birds smell?—Dr. Alex. Hill, of Cambridge, writing in 'Nature' (vol. 71, p. 318, Feb. 2nd, 1905), maintains that the sense of smell must be but little developed in Birds. "The olfactory bulbs are small." But he asks for more information about *Apteryx*, in which Owen has stated that the turbinated bones are extensive and complicated. To this question Professor Benham, of Otago ('Nature,' vol. 72, p. 64), replies that several points concerning the structure and habits of the Kiwi suggest that its sense of smell is highly developed. The nostrils, instead of being at the base of the beak, are at the extreme tip and on the under-surface. The olfactory sacs, with their complex of turbinals, extend so far back as to project into the orbits, the eyes being separated by them instead of by a thin bony interorbital septum, The eyes of the bird are small and inefficient, notwithstanding its nocturnal habits, and observers state that the Kiwi seeks its food by its sense of smell or hearing. In searching for food the bird thrusts its beak into moss, piles of leaves, or holes in the ground, and assumes an attitude suggestive of trying to obtain evidence of the presence of food either by smell or by listening for the sound of movements made by a worm. These statements suggest the probability of a well-developed sense of smell is the Kiwi, and Prof. Benham hopes to have experiments carried out on *Apteryx, Ocydromus,* and *Stringops,* in order to obtain further evidence upon the matter.

The Systematic Position of the Eurylæmidæ.—At the Meeting of the Zoological Society of London on May 3rd last, Mr. W. P. Pycraft, F.Z.S., read a paper on the Osteology of the *Eurylæmidæ,* and briefly discussed the question of the systematic position of that group. While agreeing with the general consensus of opinion as to the primitive character of these birds, he held that the isolated position which they are supposed to occupy with regard to the remaining

Passeres is by no means justified by facts. The pterylography, osteology, and myology of the *Eurylæmidæ* all tended to shew that the nearest allies of these birds were the *Cotingidæ*. Although undoubtedly primitive, the group, Mr. Pycraft pointed out, presented a number of specialised characters, which were especially marked in the skull and in the muscles of the wing.

Birds of the Tibetan Expedition.—Capt. H. J. Walton, of the Indian Medical Service, who, as we stated (see above, p. 293), accompanied the expedition to Lhasa as Naturalist, has arrived in London, and is engaged in working out his collections at the Natural History Museum. He has brought from the district round the Tibetan capital a good series of birds, some 500 in number, referable to, perhaps, 120 species, amongst which are some interesting novelties. We are pleased to be able to state that Capt. Walton is engaged in preparing a memoir on this interesting collection for publication in this Journal.

The Fourth International Ornithological Congress.—The Fourth International Ornithological Congress (see above, pp. 144, 292) commenced its sittings at South Kensington on June 12th and continued them to the end of the week. We hope to be able to give an account of its proceedings in our next number.

Retrospective Priority in Nomenclature.—In his Presidential Address to the Geologists' Association (Proc. Geol. Assoc. xix. p. 70) Dr. A. Smith Woodward has boldly stated his opinion that "since the fatuous fad of retrospective priority became fashionable the naming of certain groups has lapsed into inextricable confusion, and that until common sense methods prevailed a serious obstacle was thus opposed to real scientific work."

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XXXIV.—*On a Collection of Birds from Somaliland.* By Harry F. Witherby. *With Field-notes by the Collector,* Captain A. E. Hamerton, R.A.M.C., D.S.O.

(Plate X.)

The collection which is described in the following pages was made by my friend Capt. A. E. Hamerton, while on active service with the Somaliland Field Force in 1903–4. Capt. Hamerton experienced many difficulties in making the collection, owing to military exigencies. He had the ill-fortune also to lose several little collections and many odd skins in various ways. For instance, all his boxes had to be abandoned on one crossing of the terrible Haud, so that it was only by dint of great perseverance that he was able to send home any skins at all.

Many Somaliland collections have been described in 'The Ibis,' but most of them have been made in Western Somaliland, whereas a large number of Capt. Hamerton's birds were obtained in Eastern Somaliland. For this reason the specimens, although so few, are extremely interesting. The Larks, with several distinctly new forms, are of special note, and there is no doubt that the eastern half of Somaliland contains many unknown species of birds.

Judging from the few birds which Capt. Hamerton sent from Obbia, that district, which should be easy to work, would make a profitable hunting-ground.

It is impossible to give an itinerary of Capt. Hamerton's wanderings with the Field Force. Over 2000 miles were covered, and the same ground was often passed over several times.

The following table of the places from which the specimens are dated, together with their approximate positions, will give an idea of the region visited :—

1903.
Jan. 11, 12, 13, 15, 17. Obbia, East Coast of Somaliland.
Feb. 3. Galkayu, about 120 miles N.W. of Obbia (6° 50′ N. lat., 47° 30′ E. long.).
,, 16 & 20. Obbia.
March 11, 14, 20, 23. Dibbit, near Galkayu.
April 3 & 6. Galkayu.
May, 3, 4, 9, 14, 20, 30. Bera, near Galkayu.
July 27, 28. Upper Sheikh, about 40 miles south of Berbera.
Sept. 3. Galkayu.
,, 7. Belindula.
Dec. 17, 20, 23, 24, 29, 30. Eil Dab, about 100 miles S.S.E. of Berbera (about 9° N. lat., 46° E. long.).
1904.
Jan. 16. Dari Ali, Nogal Valley, about 60 miles S.E. of Eil Dab.
Feb. 12, 15. Eil Dab.
,, 16. Olesan, near Eil Dab.
,, 20. Burao, near Eil Dab.
March 1–4. Upper Sheikh.

,, 6, 16. El Afweena.	Wasangali Country.	N.E. Smaliland, about 11° N. lat., 48° E. long.
,, 17. Gur Anod.		
April 1. Auseneh.		

My best thanks for much kind help and advice are due and here rendered to Dr. E. Hartert, Mr. Ogilvie-Grant, and Dr. R. B. Sharpe.

1. NECTARINIA METALLICA Licht.

138 & 139. ♂ ♂. Auseneh, Wasangali Country, April 1, 1904.

2. **Cinnyris hawkeri** Neum.

117. ♂. Burao, Feb. 20, 1904.

The red tips to the blue feathers of the lower part of the pectoral band are bleached to a greyish colour.

3. **Chalcomitra hunteri** (Shelley).

46. ♂. Bera, May 9, 1903.
57. ♂. Bera, May 4, 1903.
100. ♂. Eil Dab, Feb. 15, 1904.

In No. 100 the colour of the gorget has changed from crimson to orange, and the other metallic colours have altered, probably owing to the carbolic powder which was sprinkled among the birds in the box in which they were packed.

4. **Anthothreptes orientalis** Hartl.

22. ♂. Dibbit, March 14, 1903.

5. **Parus thruppi** Shelley.

141. ♂. Auseneh, Wasangali Country, April 1, 1904.

6. **Parisoma boehmi** Reichen.

107. ♂. Eil Dab, December 20, 1903.

"Iris hazel. Good songster. The song is loud, but short and scrappy like that of a Sedge-Warbler."—A. E. H.

7. **Anthus sordidus** Rüpp.

144. ♀. Auseneh, Wasangali, April 1, 1904.

8. **Anthus campestris** (Linn.).

143. ♂. Auseneh, Wasangali, April 1, 1904.

9. **Mirafra gilletti** Sharpe.

Unnumbered. ♂. Bera, May 4, 1903.
109. ♂. Eil Dab, Dec. 30, 1904 [1903].
111. ♀. Eil Dab, Dec. 30, 1903.

The unnumbered specimen from Bera is rather small for a male, and is paler on the back and less striated on the upper breast and throat than the others. It is in rather worn plumage, which may account for its pale colouring.

10. **Mirafra collaris** Sharpe (Bull. B. O. C. vol. v. p. xxiv).

27. ♂. Dibbit; no date, but probably March 1903.
115. ♂. Olesan, Feb. 16, 1904.

The only specimen in the British Museum of this beautiful Lark has no exact locality on the label; and Dr. Sharpe described it as collected by Dr. Donaldson Smith on his expedition to Lake Rudolph, giving no more exact locality.

In coloration No. 115 agrees with Dr. Smith's specimen; but No. 27 is decidedly paler on the upperside, and on the underside including the under wing-coverts. The primaries of this bird (27) are edged with white instead of chestnut, but it is in somewhat faded plumage, and Dr. Smith's bird is freshly moulted.

The wings measure:—No. 27, 86 mm.; No. 115, 79 mm.; Dr. Smith's specimen, 86 mm.

"This bird is very shy. It does not fly much, but runs with great celerity, and then squats under a bush until danger is past. Its red plumage blends with the colour of the soil, so that it becomes almost invisible. It is found only where the soil is brick-red, as on the Haud. It occasionally gives forth a short weak song, uttered from the top of a low bush. Nowhere a common bird, it is most numerous in the Haud, and is occasionally seen near its northern and southern borders. I have never seen more than one at a time."—A. E. H.

11. CERTHILAUDA SOMALICA. (Plate X.)

Certhilauda somalica Witherby, Bull. B. O. C. vol. xiv. p. 29.

Unnumbered. ♂. Dibbit, March 11, 1903.

I have already fully described this Lark, which appears to belong to a species very distinct from all others.

Capt. Shelley considers that it should be placed in the genus *Mirafra*, because its bill measures less than its middle toe and claw (see Reichen. Vög. Afr. vol. iii. pt. i. p. 352, footnote).

I measure the bill from the base of the skull as 1 inch and the middle toe and claw as ·9 inch. Capt. Shelley perhaps measures from the tips of the feathers to the tip of the bill.

Taking Dr. Sharpe's key to the genera of Larks in the 'Catalogue of Birds' (vol. xiii. p. 512) as a guide, this bird must certainly be placed in the genus *Certhilauda.* In this Dr. Sharpe, who has kindly examined the bird with me, agrees.

The bill, the feet and claws, and the wing seem to me in structure and shape to agree very nearly with those of other species of *Certhilauda*, and not with those of *Mirafra.*

12. ALÆMON HAMERTONI, sp. nov.

♂ *ad.* Head, mantle, scapulars, back, and upper wing-coverts greyish brown, the feathers tipped with pale grey. Upper tail-coverts pinkish buff. Tail-feathers dark brown edged with buff. Primaries brown margined with buff. Secondaries darker brown edged with pinkish buff. Chin and throat white; upper breast greyish brown; lower breast, belly, flanks, and under tail-coverts white washed with pinkish buff. Under wing-coverts and axillaries white; an indistinct pale buff supercilium. The secondaries nearly equal in length to the primaries.

Measurements in inches:—Wing 4, tail 3, tarsus 1·3, culmen from base of skull ·9, middle toe with claw ·8, hind toe with claw ·7, claw of hind toe ·35.

1st (bastard) primary from tip of under wing-coverts ·9.

The female, from the same place and shot on the same date, is similar to the male.

Type (in Brit. Mus.), ♂. Obbia, east coast of Somaliland, January 13, 1903 (A. E. Hamerton, collector).

Both specimens are in worn plumage and are just beginning to moult, the new feathers sprouting on the back being of a slightly darker colour than the old ones.

This bird seems to be a very distinct species. It may be distinguished at once from *Alæmon desertorum*, its nearest ally, by the absence of white bars on the wing and by its smaller size. It is also rather darker on the back than *A. desertorum*, and has no distinct spots on the upper breast.

13. ALÆMON HAMERTONI ALTERA, subsp. nov.

♂ *ad.* This bird differs from typical *A. hamertoni* described above by the whole of the upperside being of a pale sandy colour. The flanks and belly are also more buff-coloured and the upper breast is more faintly marked with greyish brown, while the under wing-coverts and axillaries are pale sandy buff. The buff-coloured supercilium is also more distinct.

Measurements in inches:—Wing 3·9, tail 2·8, tarsus 1·2, culmen from base of skull ·9, middle toe and claw ·7, hind toe and claw ·65, claw of hind toe ·35.

Type (in Brit. Mus.), ♂. El Afweena, Wasangali Country, Somaliland, March 16, 1904 (A. E. Hamerton, collector).

Another male procured on April 1, 1904, at Auseneh, also in the Wasangali Country, is similar and has the same measurements, except that the wing is 4 and the tail 3 inches.

14. SPIZOCORYS OBBIENSIS, sp. nov.

Ad. Top of head, mantle, wings, and wing-coverts dark brown margined with greyish white. Rump pale buff with indistinct brown transverse markings. Upper tail-coverts buff. Tail dark brown, with the three outer pairs of feathers edged with white and the rest margined with pale buff. An indistinct white supercilium and a white mark running from the nostril under the eye and curving up nearly meeting the supercilium. Chin and throat white. Breast greyish white, the feathers mesially streaked with dark brown. Belly and under tail-coverts buffish white. Axillaries and under wing-coverts greyish white. Under lining of the wing on the inner margins of the feathers pinkish.

Measurements in inches:—Wing 2·6, 1st primary ·4. Bill from base of skull ·55; at nostrils, height ·28, breadth ·2. Tarsus ·7. Middle toe and claw ·6. Hind toe and claw ·65; hind claw ·4.

Secondaries ·2 shorter than primaries.

Nostrils covered with stiff bristly plumes.

Type (in Brit. Mus.). Obbia, east coast of Somaliland, Jan. 12, 1903 (A. E. Hamerton, collector).

I have given as full a description of this bird as possible, because I am not at all certain in which genus it should be placed.

I have taken Dr. Sharpe's key to the *Alaudidæ* in the Cat. of Birds (vol. xiii. p. 512) as my guide, and according to this the bird may be a *Spizocorys.*

The bird appears to be too unlike any other Lark to make any comparison useful. Unfortunately Capt. Hamerton obtained only one specimen.

15. PSEUDALÆMON FREEMANTLII (Lort Phillips).

44. ♂. Bera, May 9, 1903.

135. ♀. El Afweena, Wasangali Country, March 16, 1904.

16. TEPHROCORYS BLANFORDI, Shelley, Birds of Africa, vol. iii. p. 128, pl. xxi. fig. 2.

136. ♂. Gur Anod, Wasangali Country, March 17, 1904.

I have referred this specimen to this species, but the material available is altogether insufficient to make it clear whether the species is a good one or not. The type and only example of the species in the British Museum is certainly very different from typical *T. ruficeps*, being smaller and very much paler on the back and less rufous on the flanks.

The specimen procured by Capt. Hamerton is slightly paler than the type and is smaller, measuring in inches as follows:—Wing 3, tarsus ·6, culmen ·35.

The type was shot in Northern Abyssinia, while in Western Somaliland the typical *T. ruficeps* is found, so that it would appear strange for another example of *T. blanfordi* to be found in North-eastern Somaliland.

More material may prove that the North Abyssinian birds and the North-eastern Somali birds are two distinct races of the typical *T. ruficeps.*

17. AMMOMANES DESERTI AKELEYI.

Ammomanes akeleyi Elliot, Field Columb. Mus. Pub. 17, vol. i. no. 2, p. 39.

113. ♂. Eil Dab, Dec. 23, 1903.

This specimen has been compared with others in the British Museum collected by Dr. Donaldson Smith, and by Messrs. Lort Phillips and Hawker in Somaliland. These, however, do not agree with Mr. Elliot's description, in that the rumps are bright deep buff like the under wing and not by any means "golden buff," and the colouring of the top of the head does not form a "kind of cap," but is similar to that of the back, except that the dark brown mesial markings of the feathers on the head are accentuated. But as the birds appear to come from the same region, and the description otherwise tallies, perhaps these specimens are the same as the type.

I cannot agree with Capt. Shelley (Birds of Afr. vol. iii. p. 97) that this bird is the same as *A. d. phœnicuroides*. They seem to me perfectly distinct, and I think *A. d. akeleyi* is more nearly like *A. d. algeriensis*.

"Common on the stony summits of hills."—A. E. H.

18. GALERIDA THEKLÆ ELLIOTI.

Galerida ellioti Hartert, Nov. Zool. 1897, p. 144.

Galerida pallida (non *pallida* Brehm) Elliot, Field Columb. Mus. Pub. 17, vol. i. no. 2, p. 38.

101. ♀. Eil Dab, Feb. 12, 1904 [wing 3·8 inches].

This specimen has the short bill and long first (bastard) primary like other members of the *Galerida theklæ* group, but its under wing-coverts are pale buff without a trace of grey, while all other *theklæ* have grey on the under wing-coverts.

Dr. Hartert, to whom I have submitted the specimen, considers it to be, from the description, referable to *G. ellioti*, but neither he nor myself has had access to the type.

19. PYRRHULAUDA MELANAUCHEN (Cab.).

6. ♂. Obbia, Jan. 13, 1903.

I think that this bird will prove to belong to an undescribed race most nearly allied to *P. melanauchen*, but the male with no white frontal spot and with the mantle very pale. In this specimen, which is too much abraded to make a proper description or comparison possible, the mantle and upper wing-coverts are nearly white, but the bird is no doubt much faded, as the black part of the plumage has become a rusty-brown. There is no trace of a white frontal spot, and I think the bird could never have had one.

20. Emberiza poliopleura (Salvad.).

40 & 40. ♂ ♂. Bera, May 4, 1903.

21. Poliospiza tristriata (Rüpp.).

Poliospiza pallidior Lort Phil. Ibis, 1898, p. 398.

121. ♀. Upper Sheikh, March 1, 1904.

I cannot agree with Mr. Lort Phillips that the Somaliland birds are separable from the Abyssinian ones of this species. If there is a constant difference it is an exceedingly small one, and such fine distinctions should be based on a large series of specimens. There are only a few Abyssinian specimens in the British Museum, and these are mostly old and, I think, slightly discoloured.

22. Fringillaria striolata (Licht.).

140. ♂. Auseneh, Wasangali Country, April 1, 1904.

23. Serinus donaldsoni Sharpe.

37. ♂. Galkayu, April 6, 1903.

24. Serinus maculicollis Sharpe.

114. ♂. Olesan, Feb. 16, 1904.

This specimen has been more or less bleached, perhaps by carbolic acid. The green and yellow have disappeared.

25. Hyphantornis spekii Heugl.

142. ♂. Auseneh, Wasangali Country, April 1, 1904.

"Iris golden yellow."—A. E. H.

26. Granatina ianthinogaster (Reichen.).

99. ♂. Eil Dab, Feb. 15, 1904.

"Bill coral-red, eye coral-red, iris dull gold colour."—A. E. H.

G. hawkeri Lort Phillips (Bull. B. O. C. vol. viii. p. xxiii) seems to me a very doubtful form. The blue feathers on the head are only blue-tipped, and when the feathers become worn the blue colouring naturally diminishes in extent. Specimens in worn plumage become also paler on the head and back. A good series of specimens in fresh plumage may prove that the Somaliland bird belongs to a distinguishable race.

"Very shy bird. Lives in grassy bottoms of thick bush and is rarely seen though common."—A. E. H.

27. Passer castanopterus Blyth.
45. ♂. Bera, May 9, 1903.
129 & 130. ♂ ♂. Upper Sheikh, March 1, 1904.
131 & 132. ♀ ♀. Upper Sheikh, March 4, 1904.

As the female does not appear to be well known, it may be briefly described as being on the whole of the underside bright yellowish buff colour, becoming duller on the flanks; while the upperside is like that of the male, except that all the chestnut colour in the male is replaced by buffish brown in the female.

"This was a scarce bird in Somaliland before the war. It now (1904) swarms along the lines of communication, following the ration convoys from post to post, feeding on the animal droppings and litter from the grain-bags."—A. E. H.

28. Passer diffusus swainsoni.
Pyrgita swainsoni Rüpp. Neue Wirb. p. 94.
128. ♂. Upper Sheikh, March 1, 1904.

29. Dinemellia dinemelli (Rüpp.).
25. ♀. Dibbit, March 20, 1903.

30. Textor intermedius Cab.
38. ♂. Bera, May 4, 1903.

31. Pholidauges bicolor (Reichen.).
39 & 39. ♂ ♀. Bera, May 4, 1903.
"Iris crimson."

32. Cosmopsarus regius Reichen.
28. ♂. Galkayu; no date, probably early April 1903.
"Iris white."—A. E. H.

33. Lamprocolius chalybeus (Ehr.).
No label.

34. Spreo albicapillus Blyth.
32. ♀. Galkayu, April 6, 1903.

35. Spreo superbus (Rüpp.).
28. ♂. Galkayu; no date, probably early April 1903.
"Iris white."—A. E. H.

36. Amydrus blythi Hartl.
122. ♀.
123. ♂. } Upper Sheikh, March 1, 1904.
"Iris crimson."—A. E. H.

37. Eurocephalus rueppelli Bonap.
60. ♀. Upper Sheikh, July 28, 1903.
119. ♀. Burao, Feb. 20, 1904.

38. Lanius antinorii Salvad.
26. No sex. Dibbit, March 20, 1903.

39. Nilaus minor Sharpe.
56. ♂.
58. ♀. } Bera, May 4, 1903.

40. Dryoscopus æthiopicus (Gmel.).
One, no label.
126. ♂.
126. ♀. } Upper Sheikh, March 1, 1904.

41. Laniarius cruentus hilgerti.
Pelicinius cruentus hilgerti Neumann, Orn. Monat. xi. no. 12, p. 182.
53. ♂. Bera, May 30, 1903.
59 [♀]. Upper Sheikh, July 28, 1903.
103. ♂.
104. ♀. } Eil Dab, December 17, 1903.

These and other Somaliland specimens, as compared with Abyssinian examples, are darker brown and washed with a stronger pink on the upperside (the variation in the pink coloration is perhaps an individuality), while the flanks are more heavily marked with gold-buff colour. The female of this form cannot well be distinguished from that of *L. c. cathemagmenus.*

42. Argya aylmeri Shelley.
51. ♀. Bera, May 20, 1903.

43. Crateropus smithii Sharpe.
127. ♀. Upper Sheikh, March 1, 1904.
"Iris red."—A. E. H.

44. Aëdon galactodes minor.

Aëdon minor Cab. Mus. Hein. i. p. 39 (1850).

Sylvia galactodes Temm.; Seebohm, Cat. Birds Brit. Mus. vol. v. p. 34, specimens *m, n, o, p*.

47. ♂. Bera, May 14, 1903.

This specimen is particularly small, measuring as follows in inches:—Wing 2·8, tail 2·5, culmen ·65, tarsus ·85.

The outer margins of the secondaries are very distinctly fringed with white.

I have examined eleven other specimens from Abyssinia and Somaliland, and although not one of them is so small as this specimen, they are all small compared with examples from South Europe and North Africa. The white margins of the secondaries are not perhaps a constant character, but the small size of the Somaliland and Abyssinian birds entitle them to subspecific rank. Cabanis's description was based upon a single specimen from Abyssinia.

45. Aëdon galactodes familiaris.

Sylvia familiaris Ménétr. Cat. Rais. Cauc. p. 32.

137. ♂. Auseneh, Wasangali Country, April 1, 1904.

46. Erythropygia leucoptera (Rüpp.).

106. ♂. Eil Dab, Dec. 20, 1903.

47. Saxicola œnanthe (Linn.).

4. ♂. Obbia, Jan. 12, 1903.

48. Saxicola morio H. & E.

108. ♂. Eil Dab, Dec. 29, 1903.

49. Saxicola phillipsi Shelley.

24. ♂. Dibbit, undated, probably March 1903.

50. Bradyornis pumilus Sharpe.

Unnumbered. ♂. Galkayu, April 6, 1903.

112. ♂. Eil Dab, Dec. 24, 1903.

51. Batis orientalis (Heugl.).

105. ♂. Eil Dab, Dec. 17, 1903.

This specimen is very small, but, I think, should be referred to this species. It measures in inches as follows:—Wing 1·9, tail 1·2, culmen ·6, tarsus ·6.

The bird is evidently in transitional plumage, and may not be fully adult, since the pectoral band is a mixture of blue-black and chestnut feathers.

It may be that both sexes have a black band across the breast at certain ages, and so the question of the varying determinations of the sexes may be explained (see Grant, Ibis, 1904, p. 270).

52. Terpsiphone cristata (Gm.).
124. ♂.
125. ♂. } Upper Sheikh, March 1, 1904.
125. ♀.

124 has no rufous, and the back and tail are almost pure white.

53. Caprimulgus torridus Lort Phillips.
22. ♂. Dibbit, March 14, 1903.

54. Caprimulgus europæus unwini.
Caprimulgus unwini Hume, Ibis, 1871, p. 406.
66. ♂. Belindula, Sept. 7, 1903.
"Not common in Somaliland."—A. E. H.

55. Coracias lorti Shelley.
75. ♂. Belindula, Sept. 7, 1903.

56. Melittophagus revoilii (Oust.).
18. ♂. Dibbit, March 11, 1903.

57. Irrisor somaliensis Grant.
Unnumbered. ♂. Upper Sheikh, July 27, 1903.

58. Rhinopomastus minor (Rüpp.).
55. ? sex. Bera, May 4, 1903.

59. Colius macrurus (Linn.).
35. ♂.
36. ♀. } Galkayu, April 6, 1903.

60. Schizorhis leucogaster (Rüpp.).
31. ♂. Galkayu, April 6, 1903.
54. ♀. Bera, May 20, 1903.

61. **Tricholæma blandi** Lort Phillips.

33. ♂. Galkayu, April 6, 1903.

62. **Trachyphonus erythrocephalus** Cab.

Unnumbered. ♂. Bera, May 4, 1903.

This specimen is, I think, a female, since it has no black mesial line on the throat, and its head is red instead of black.

Prof. Reichenow considers that *T. shelleyi* equals *T. erythrocephalus*.

63. **Dendropicus hemprichi** (H. & E.).

145. ♂. } Auseneh, Wasangali Country, April 1, 1904.
140. ? ♀. }

64. **Campothera nubica** (Gmel.).

41. ♂. } Bera, May 4, 1903.
42. ♀. }

These specimens are small, each measuring only 3·8 inches in the wing.

The breast and flanks of No. 41 are whiter and less spotted, and the back is paler than typical specimens.

65. **Vinago waalia** (Gm.).

Unnumbered. ♂. Upper Sheikh, March 1, 1904.

66. **Pœocephalus rufiventris** (Rüpp.).

49. ♂. Bera, no date.

67. **Carine spilogastra** (Heuglin).

Unnumbered. ♂. Galkayu, April 3, 1903.

68. **Scops leucotis** Temm.

Unnumbered. ♀. Galkayu, Feb. 3, 1903.

Pale on back and very few dark markings on nape. The width of the transverse bars on the wing-feathers varies individually. In this specimen the bars are very narrow.

69. **Poliohierax semitorquatus** (Smith).

54. ♀. } Bera, May 4, 1903.
43. ♂. }

The sexes in these two specimens are evidently wrong and should be reversed.

70. Melierax gabar (Daud.).
74. ♂. Eil Dab, Dec. 23, 1903.

Small, measuring:—Wing 173, tail 155, tarsus 42, and culmen 16 mm.

71. Francolinus spilogaster Salvad.
No label. ? Upper Sheikh.

72. Acryllium vulturinum (Hardw.).
Unnumbered. ♂. Galkayu, April 3, 1903.

73. Pteroclurus exustus (Temm.).
29 & 29. ♂ ♀. Galkayu, April 3, 1903.
No label [♀. ? same place and date].

The yellow in these specimens is of a very rich and deep shade, and so also is that in the specimens of the two following species. I have not referred these birds to *P. e. somalicus* Hartert, because it seems to me that the colour of these Sand-Grouse varies according to the colour of the desert which the birds inhabit; and there being apparently similarly coloured deserts in regions remote from each other, there are similarly coloured Sand-Grouse in those regions. At least I think this a possible explanation of the difficulty of dividing these birds, which vary so much in shades of colour, into satisfactory geographical races.

74. Pteroclurus senegallus (Linn.).
133. ♂. } El Afweena, Wasangali Country, March 16,
133 a. ♂. } 1904.

75. Pterocles lichtensteinii Temm.
Two males without labels.

76. Lophotis gindiana (Oust.).
20. ♂. Dibbit, March 11, 1903.
25. ♀. Dibbit, March 23, 1903.
Rather small, measuring:—
20. Wing 9·3, tail 5, tarsus 3, culmen 1·4 inches.
25. „ 8·8, „ 4·9, „ 2·6, „ 1·4 „

77. Heterotetrax humilis (Blyth).
116. ♂. Olesan, Feb. 16, 1904.

118. ♀.
Unnumbered. ♂. } Burao, Feb. 20, 1904.

"Iris yellow."—A. E. H.

78. Neotis heuglini (Hartl.).

Unnumbered. ♀. Dari Ali, Nogal Valley, Jan. 16, 1904.

79. Œdicnemus affinis Rüpp.

20. ♀. Dibbit, March 11, 1903.

80. Cursorius gallicus somalensis Shelley.

2. ♀.
3. ♂. } Obbia, Jan. 12, 1903.

12. Juv. Obbia, Jan. 17, 1903.

The colour of the upperside and of the breast of this form seems to vary slightly, but Nos. 2 and 3 are of a drab-brown rather than of a sandy-buff.

The young bird (No. 12) as compared with the young of typical *C. gallicus* has a much darker upperside, with a more black and white appearance, the feathers of the top of the head and back being of a very dark brown with transverse bars of pale buff. The wing-coverts are pale buff barred with dark brown. The tail-feathers are ashy-grey on the basal half and buff barred with dark brown on the lower half. The feathers of the upper breast are buff, lightly barred with brown. The axillaries are ashy-grey as in the adult.

81. Rhinoptilus hartingi Sharpe.

26 & 26. ♀ ♂. Dibbit, March 20, 1903.

82. Ægialitis pecuaria (Temm.).

16. ♂.
17. ♀. } Obbia, Feb. 16, 1903.

83. Ægialitis marginata (Vieill.).

9. ♂. Obbia, Jan. 15, 1903.

84. Charadrius asiaticus Pall.

1. ♂. Obbia, Jan. 11, 1903.
10. ♂. ,, Jan. 15, 1903.
18. ♂. ,, Feb. 20, 1903.

XXXV.—*On some rare or unfigured Eggs of Palæarctic Birds.*
By H. E. Dresser, F.Z.S., M.B.O.U., &c.*

(Plate XI.)

Lanius cristatus. Brown Red-tailed Shrike. (Pl. XI. figs. 6, 9.)

(Dresser, Man. Palæarct. Birds, p. 240.)

This Shrike inhabits Eastern Asia, and breeds in Dauria, where the eggs now figured were obtained by Dr. Dybowski. It arrives in Dauria late in May, and commences nidification about the middle of June. The nest is placed in a bush or in the branches of a fallen tree about 1½ metres above the ground. The eggs resemble some varieties of *Lanius collurio*, but are smaller and, as a rule, paler, with fewer and smaller markings. In size they measure about 0·85 by 0·64 inch.

Lanius bucephalus. Bull-headed Shrike. (Pl. XI. figs. 10, 11, 12.)

(Dresser, Man. Palæarct. Birds, p. 242.)

The only country from which I have seen the eggs of this Shrike is Japan, where the bird breeds not uncommonly, placing its nest in thorny bushes, from about four to ten feet from the ground. The eggs now figured are out of two clutches, one of which was taken from a nest placed in a *Cryptomeria* on Fuji, about ten feet above the ground, and the other on a Shikimi tree near Tokyo, six feet above the ground. The eggs vary a good deal, some being pale whitish with small and somewhat pale markings, whereas others have a darker background and are boldly and more darkly blotched. Those in my collection measure about 0·95 by 0·73 inch.

Lanius raddii. Radde's Grey Shrike. (Pl. XI. figs. 1, 2, 3.)

(Dresser, Man. Palæarct. Birds, p. 244.)

Mr. Zarudny was the first to discover the nest of this rare Shrike on his last expedition to Persia, and kindly sent me four eggs, which are, I believe, the only authentic specimens yet known. He writes to me as follows:—"These eggs were taken on the 13/25 May at Keróo, in the province of Gilyan, North Persia. The nest was placed in a barberry-bush (*Berberis densiflora*) which grew on the bank of a small mountain-stream, and was about four feet above the ground. It was firmly and compactly built, the outermost wall of loose juniper-twigs, the prickly branches of the barberry, and prickly leaves of various plants; the next layer, or middle wall, was of narrow or wider juniper-ends, mixed with grass-stems: and the inner wall or lining was composed of fine rootlets, sheep's wool, and goat's hair. Along the edges of the outer wall filaments of grass-leaves and stout grass-straws were laid in such a manner as to form a regular pentagon, and in some parts of the outside the nest was decorated with pieces of cotton-wool and sheep's wool. The measurements of the nest were as follows:—Total height 85 mm. (3·35 inches), depth 60 (2·36), outside diameter 125 (1·92), diameter of cup 68 (2·68)." The average size of the four eggs is 0·9 by 0·7 inch.

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* Continued from 'Ibis,' 1904, p. 189.

LANIUS ERYTHRONOTUS. Rufous-backed Shrike. (Pl. XI. figs. 5, 8.)

(Dresser, Man. Palæarct. Birds, p. 245.)

The breeding-range of this Shrike extends from Turkestan down into India. The bird breeds from March to August, according to the locality, and Major Wardlaw Ramsay found many nests in Afghanistan in May and June. These he describes as being composed of green grass, moss, cotton-wool, thistledown, rags, cow's hair, mule's hair, and shreds of juniper-bark, &c.; they were placed in willows by the river-bank, in apricot-trees, and in one instance in the centre of a dense thorny creeper. The two eggs figured are from the same clutch, to shew the variation. Eggs in my collection vary in size from 0·87 by 0·67 to 0·92 by 0·72 inch.

LANIUS RUFUS O.-Grant, nec Gmel. Eastern Woodchat-Shrike. (Pl. XI. figs. 4, 7.)

This subspecies, which was differentiated by Mr. Ogilvie-

Grant (Nov. Zool. ix. p. 464), is an eastern form of our common Woodchat-Shrike, differing in having the basal portion of the middle tail-feathers white. It was found by Mr. Zarudny breeding in Arabistan, Persia, in March 1904; he obtained four clutches of its eggs, all of which he sent to me. The eggs differ but little *inter se*, and, as was to be expected, are barely separable from those of the Western Woodchat (*Lanius auriculatus*); for subspecies, so far as my experience goes, lay eggs which do not differ from those of the typical species; nor does this subspecies differ in the nest or mode of nidification. The dimensions of eggs of three clutches average 0·89 by 0·68 inch.

I am doubtful whether *rufus* is the correct specific name for this Eastern form of the Woodchat-Shrike, for *Lanius rufus* of Brisson (Orn. ii. p. 147) and Kaup (Natürl. Syst. p. 33) are both referable to our European Woodchat, whereas *L. rufus* of Gmelin is in point of fact quite a different bird. But I hold that Mr. Ogilvie-Grant (Nov. Zool. ix. p. 470) was in error when he discarded *Lanius auriculatus* of Müller (including it doubtfully among the synonymy of *Lanius minor*) in favour of *pomeranus* of Sparrman *.

EXPLANATION OF PLATE XI.

Eggs of

Figs. 1, 2, 3.	*Lanius raddii*, p. 525.
„ 4, 7.	*Lanius rufus*, p. 526.
„ 5, 8.	*Lanius erythronotus*, p. 526.
„ 6, 9.	*Lanius cristatus*, p. 525.
„ 10, 11, 12.	*Lanius bucephalus*, p. 525.

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* [It is possible that Mr. Ogilvie-Grant may have been wrong in suggesting that the term "*auriculatus*" may belong to *Lanius minor*. But we agree with Mr. Saunders ('Ibis,' 1883, p. 83) in adopting "*pomeranus*" of Sparrman as the first *certain* specific name for the Woodchat, and employed as such in the B. O. U. List.—Edd.]

XXXVI.—*Notes on Alphéraky's 'Geese of Europe and Asia.'*

By T. Salvadori, H.M.B.O.U.

When I was working at the twenty-seventh volume of the 'Catalogue of Birds in the British Museum' I was fully aware that the material at my disposal was not sufficient to settle several questions, especially as regards the species of Geese, and I entertained the hope that Russian ornithologists might procure the requisite materials more easily than those of other countries, inasmuch as many of the species of *Anser* are at home in Siberia and in the more northern latitudes of the Russian Empire. It was, then, with great expectations that I heard of Mr. Alphéraky's project of bringing out a 'Monograph of the Geese of Europe and Asia.' My expectation has not been disappointed, and I have found Alphéraky's book a good piece of work, on which, however, I wish to offer a few remarks.

As it is most important to know the geographical distribution of the Geese—where they breed and whither they migrate,—a map, in which the areas of the different species are clearly shown, would have been a great improvement to the work. The lack of this feature is much to be regretted. Another weak point of Alphéraky's essay is the want of conciseness and the very frequent repetitions, which, instead of producing clearness often lead to the opposite result.

The genera *Chen* and *Philacte* do not call for remarks, as does the genus *Anser*. This has been split in two, viz. *Anser* of Brisson and *Melanonyx* of Buturlin: the former genus being distinguished by the light nail of the bill and by the feet entirely light-coloured, and by the abdomen having black patches in the adult birds; while the second (*Melanonyx*) has a black nail on the bill and shews no black patches on the abdomen. These characters do not appear to me to be of generic value.

In the genus *Anser* are included the Grey Lag Goose (*Anser anser* = *A. ferus*), the White-fronted Goose (*A. albifrons*), and the Lesser White-fronted Goose (*A. finmarchicus*).

As to the first species, Mr. Alphéraky unites together the Western (*A. anser*) and the Eastern form (*A. rubrirostris* Hodgs.), for he finds that there is no difference between them. I do not know whether Mr. Alphéraky has drawn his conclusions from the comparison of such a number of specimens as I had before me in the British Museum, but at the time I thought that the 24 specimens of the Eastern Grey Lag Goose examined by me were sufficiently larger in size and more spotted with black patches on the abdomen to enable me to recognise them as a distinct form. No doubt the differences are small, and it may be a matter of opinion to accept or not the Eastern or Asiatic form as specifically or subspecifically different. Mr. Alphéraky, speaking of another species, says "that there is a general increase of [size in] bills in Geese as we proceed eastwards." I believe that the Grey Lag Goose follows this rule, and that the Eastern bird ought to be—and, I believe, is—somewhat different from the Western form.

Among the distinctive characters of the Eastern Grey Lag Goose has been mentioned the bright red base of the upper mandible. This information, which appeared also in the 'Catalogue of Birds' (p. 92), I derived from Radde, but Mr. Alphéraky points out that it has arisen from a mistake of Taczanowski and others, who have misunderstood a passage of Radde (Sib. Reis. ii. p. 358), where he mentions a rusty-brown colour, not on the base of the bill itself, but on the feathers round the base of the upper mandible, which, as a narrow band, passes into fiery foxy red.

The White-fronted Goose (*A. albifrons*) calls for only one remark, viz. that Mr. Alphéraky lumps with it *A. gambeli*, which the American ornithologists, and I following them, generally regard as a larger form of *A. albifrons*.

The smaller White-fronted Goose only requires to be mentioned on account of the name "*Anser finmarchicus* Gunner" used by Alphéraky in preference to "*Anser erythropus* Linn." I still think that we must not give up Linnæus's name (*cf.* Newton, P. Z. S. 1860, pp. 339–341). To the synonymy of this species is now added *Anser rhodo-*

rhynchus Buturlin, Psov. i Ruzh. Okh. 1901 (Dikie Gusi Ros. i., Febr.-Apr.); id. sep. impr. p. 19; id. Sin tabl. Okhotn. Pt. Ross. i. 1901, p. 46; id. Psov. i Ruzh. Okh. 1902, June, p. 120.

In the genus or subgenus *Melanonyx* the following species are included:—*M. neglectus*, *M. brachyrhynchus*, *M. arvensis*, *M. arvensis sibiricus*, *M. segetum*, *M. carneirostris*, *M. segetum serrirostris*, and *M. mentalis*.

For convenience' sake I must begin my remarks with the Bean-Goose, which in the 'Catalogue of Birds' stands as *Anser fabalis* (Lath.), but which Mr. Alphéraky prefers to call *A. segetum* (Gm.). The author splits this species into two—namely, *A. arvensis* Brehm and *A. segetum*; the first being distinguished by a larger yellow bill, while the latter has a shorter black bill with a yellow band round it, between the black nail and the nostrils. These differences were clearly pointed out long ago by Naumann (Vög. Deutschl. xi. pp. 277, 300, tt. 286, 287; Naumannia, 1853, pp. 5–8, Taf. i. ff. A, B, C, D, E, F), and it may be that they have not been duly appreciated. Apparently Mr. Alphéraky has noticed another very important character in the bill, which "if looked at from above shows the apparent length of the nail in adult birds of *M. segetum* contained in the total culmen-length not more than 3½ times, while in *M. arvensis* the same nail is contained in the culmen in adults up to 4½ times." This character really appears to me of great importance, although unfortunately I have not been able to test it, as all the Bean-Geese from Italy in our collection belong to the true *A. segetum*, and none to *A. arvensis*. The question of the distinction of the two birds must be carefully investigated, as there are a few points not quite clear, especially as regards geographical distribution. It appears that the breeding-area of *A. arvensis* is more extended both westwards and eastwards than that of *A. segetum*, and in two localities (Kolguev Island and Novaya Zemlia) both these species have been found breeding. From Mr. Alphéraky's remarks it appears that "in Holland, Belgium, France, Germany, Austria, Hungary, Turkey, and Greece *M. segetum* is certainly met with, but everywhere in scant numbers as compared with *M. arvensis.*" But in Italy, from what I know, it is quite the reverse. I have been assured that *A. arvensis* has also been found in Italy, but in any case it is very rare compared with *A. segetum,* which is extremely abundant in winter. This difference in the number of specimens of the two forms in Italy and elsewhere goes to shew that they are really specifically distinct.

While these remarks were being written I received from my friend Count Arrigoni degli Oddi two Geese killed near Venice. These have the yellow part of the bill more or less extended on the sides towards the base, and both have a narrow line of white feathers round the base of the bill, so that apparently both belong to *Anser arvensis*; but the length of the bill is respectively 63 and 57 mm., and therefore does not reach the average length attributed to *A. arvensis,* but comes within the limits of the bill of *A. segetum* Besides, the nail of the bill is not so short and broad as it is described in the former species, and it is contained only four times in the total length of the bill, so that in this respect the bills of the two birds are intermediate between the bill dimensions of those attributed by Mr. Alphéraky to *A. segetum* and that of *A. arvensis*. I am still very puzzled about the two birds being specifically different.

Another Goose very imperfectly known, if really distinct from the common Bean-Goose, is the one from Novaya Zemlia which has been named *Anser* (*Melanonyx*) *carneirostris* Buturlin, Dikie Gusi Ross. Imp. (Psov. i Ruzh. Okh. 1901). This bird differs from the ordinary Bean-Goose in having the light band round the bill dark flesh-colour, instead of yellow-orange, while the legs and feet are of the same yellow as in *M. segetum.* A similar bird has been killed in Holland and is mentioned by Mr. Alphéraky, who is not inclined to accept the specific value of *M. carneirostris* and expresses his opinion that the peculiar colour of the bill of *M. segetum* may depend on age, dimorphism, or individual variation.

I come now to *Anser serrirostris* Gould. I must notice, first, that, speaking of this bird in the 'Catalogue,' I made the remark (p. 103) that it was "quite possible that under *A. serrirostris* I had included two distinct form—sone larger, with the culmen 3·15 inches long and with the head and neck buffish brown (*A. middendorffi*), and the other smaller, much more like *A. fabalis* (=*segetum*), but larger and with the bill much thicker (*A. serrirostris*)." Of the six specimens mentioned in the 'Catalogue,' the first [*a.* ♀ ad. Tunka, Amoor-land, May (*G. Radde*, Seebohm Coll.)] is the one which I thought could be attributed to *A. middendorffi*, while the last [*f.* Ad. Yokohama (*H. Pryer*, Seebohm Collection] has become the type of *Anser mentalis* Oates, Man. Game-Birds of India, ii. p. 77 (1899). Mr. Alphéraky, after having discussed the characters given by Oates and having examined two more similar specimens, has arrived at the conclusion that *Anser mentalis* is not specifically different from *A. serrirostris* *. Therefore we have only to discuss *A. serrirostris* and the bird which I have supposed to belong to *A. middendorffi*. As to *A. serrirostris* there is no difficulty in recognising it, for although very similar to *A. fabalis* (=*segetum*) it is much larger and is especially remarkable for its large beak and feet.

As regards *A. middendorffi*, in the 'Catalogue of Birds' I have given as distinctive characters: the size, larger than that of *A. serrirostris*, the culmen attaining the length of even 3·15 inches, and the head and neck buffish brown. Such was the bird from Tunka in the British Museum, absolutely similar to the bird from Boganida figured by Middendorff, Reise Sibir. ii. 2, Taf. xx. f. 1 (head). Also the figure of the head of *Anser arvensis sibiricus* (Alphéraky, op. cit. pl. 23) agrees in every respect with Middendorff's figure and the bird in the British Museum mentioned above. Mr. Alphéraky recognises Middendorff's Goose as a distinct species, but he thinks that the name *Anser middendorffi* cannot stand. According to him, Severtzow, under the name of *A. middendorffi*, has included also specimens of *A. arvensis* and has made other mistakes, and, therefore, Mr. Alphéraky has discarded Severtzow's name and has given to Middendorff's Goose the new name of *Melanonyx arvensis sibiricus*. From this proceeding I utterly dissent. In the first place, the bill of Middendorff's Goose is coloured exactly like that of the Bean-Goose and not like that of the Yellow-billed Bean-Goose, and therefore Middendorff's Goose evidently is not a form of *Anser arvensis*, but of *A. segetum*. Besides, Severtzow meant to give the name *Anser middendorffi* to the bird which Middendorff figured in plate xx. f. 1 (head) of the 'Reise in Sibiriens' under the name of *Anser grandis* Midd. (nec Gmel.), and this bird is the same as the one to which Mr. Alphéraky has given the name of *Melanonyx arvensis sibiricus*, which, therefore, is a synonym of *Anser middendorffi*.

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* I accept for the present this conclusion, although with some hesitation.

There are only two other species of the *Melanonyx*-group to speak of, and these are *Anser brachyrhynchus* and *A. neglectus*. The latter has been described since the publication of the 'Catalogue of Birds.' Both species are nearly allied and they are peculiar in having the light band round the bill and the feet of a light pink; apparently the pink colouring of the bill in *A. brachyrhynchus* is more extended on the sides than in *A. neglectus*. In the plumage there is one important difference duly noticed by Mr. Alphéraky, viz. the former has the wing-coverts ashy grey, while the latter has the same coverts blackish brown as in *A. segetum*. This is a very good distinguishing character between the two allied species. There are other differences of importance: *A. neglectus* is of a larger size and has the bill longer and more robust, but I doubt whether it will be always easy to distinguish *A. neglectus* from *A. segetum*, when skins have dried and thereby lost the distinctive coloration of the light band of the bill. According to Alphéraky, the bill of Sushkin's Goose is comparatively weak and narrow, less high at the base, and has the nail smaller and narrower. As regards colouring, Mr. Alphéraky declares that he has been "unable to find any distinctive differences."

The two allied birds differ also in their geographical distribution: *A. brachyrhynchus* is a more western bird, extending from Spitsbergen and probably also from Franz-Joseph Land to North-western Europe, wintering in large numbers in Great Britain. *Anser neglectus*, so far as we know at present, extends from Novaya Zemlia and probably also from Kolguev Island, through the Ufa Government in Russia, to Hungary, Persia, and most probably also to India, from which country it appears to have been recorded under the name of *A. brachyrhynchus*. It is not unlikely that *A. neglectus* breeds also to the eastward of Novaya Zemlia, and that from its summer-quarters it migrates to Japan; also to China, if it can be proved, as appears very likely, that *Anser oatesi* Rickett, from Foochow, is identical with *A. neglectus*.

The following references appear to belong to ANSER NEGLECTUS:—

? *Anser brachyrhynchus* Blyth (nec Baill.) Cat. B. Mus. A. S. B. p. 301. n. 1756 (Panjab) (1849); Irby, Ibis, 1861, p. 247 (Alumbag, Oudh); Jerdon, B. of Ind. iii. p. 780 (1864); Swinh. Ibis, 1875, p. 456 (Japan); Hume, Str. Feath. i. pp. 99, 258 (Etawah) (1873), viii. p. 114. n. 946, (1879); Hume & Marsh. Game B. of Ind. iii. p. 71, pl. ix. (1880): McLeod, Str. Feath. x. p. 168 (Punjab) (1887); Hume, Str. Feath. xi. p. 339 (1888); Seebh. B. Jap. Emp. p. 236 (note) (1890); Blanf. Fauna Brit. Ind. iv. p. 418 (1898); Oates, Man. Game-B. of Ind. ii. p. 65 (1899); Finn, How to know the Ind. Ducks, p. 17 (1901).

? *Anser obscurus* Severtz. (nec Brehm) Turkest. Jevotn. p. 70 (1873); id. Journ. f. Orn. 1875, p. 181: Dress. Ibis, 1876, p. 418; Severtz. Zeitschr. ges. Orn. 1887, p. 22.

? *Anser segetum* (part.?) Trevor-Battye, Ice-bound on Kolguev, p. 423 (1895).

Anser neglectus Sushkin, Bull. Br. Orn. Club, v. p. vi (1895); id. Ibis, 1896, p. 135; 1897, pp. 5–8, pl. ii. f. 1 (bill); Sharpe, Hand-list, i. p. 211. n. 3 (1899); Oates, Game-B. of Ind. ii. p. 75 (1899); Madarász, Termés. Füzetek, xxiii. p. 75 (1900) (Hungary); Frohawk, Field, 1902, p. 1405; Dubois, Syn. Av. p. 983. n. 11504 (1903).

? *Anser medius,* Cordeaux, Brit. B., their Nests and Eggs, p. 68, pl. xv. (1896).

? *Anser oatesi* Rickett, Bull. Br. Orn. Club, xi. p. 46 (1901) (Foochow).

Melanonyx neglectus Buturl. Psov. i. Ruzh. Okhota, 1901 (Febr.–April); id. sep. impr. p. 27 (1901); Alphéraky, Gusi Rossii, p. 76, pl. vii. (1904); id. The Geese of Eur. and Asia, p. 78, pl. vii., pl. xxiv. (bill) (1905).

Turin, Zool. Mus.,
July 1905.

XXXVII.—*Notes on the Parrots.* (Part II.)

By T. Salvadori, H.M.B.O.U.

[Continued from p. 429.]

The small family *Cyclopsittacidæ* has been lately the subject of active researches, and not a few species have been discovered and described since the publication of the *Psittaci* in the 'Catalogue of Birds.'

Dr. Hartert has published the following paper bearing on the subject, "On some Species of the Genera *Cyclopsitta* and *Ptilonopus*" (Nov. Zool. vi. p. 219, pl. iv.), while, later on, the Hon. Walter Rothschild and Dr. Hartert, in their "Notes on Papuan Birds," have given a full list, with notes, of the species of the genus *Cyclopsittacus* (*op. cit.* viii. pp. 72–77).

Only two genera belong to this family.

Neopsittacus Salvad.

Neopsittacus musschenbroeki (Rosenb.); Hartert, Nov. Zool. iii. p. 533 (1896) (Mount Victoria); Forbes & Robins. Bull. Liverp. Mus. i. p. 8 (1897).

The presence of this species in South-eastern New Guinea, together with the nearly-allied next species, is very strange, and I should say that the subject requires further investigation.

NEOPSITTACUS PULLICAUDA Hartert, Nov. Zool. iii. p. 17 (1896) (Mount Victoria); Forbes & Robins. Bull. Liverp. Mus. i. p. 8 (1897); Rothsch. Nov. Zool. v. p. 510 (1898) (=*viridiceps*); Dubois, Syn. Av. p. 33, n. 417 (fasc. i. 1899); Sharpe, Hand-list, ii. p. 8, n. 2 (1900).

? *Neopsittacus musschenbroekii* De Vis (nec Rosenb.), Rep. Brit. N. Guin. p. 1, n. 5 (1894).

Neopsittacus viridiceps De Vis, Ibis, 1897, p. 371 (♀: Mount Scratchley); Hartert, Nov. Zool. iv. p. 369 (1897) (=*pullicauda*); De Vis, Rep. Brit. New Guin. p. 81 (1898).

This species, which is very similar to *N. musschenbroeki*, "differs in having the hinder part of crown, occiput, and nape dark green, with a very slight brownish-red wash and some very faint yellowish streaks, while these parts are olive-brown with a strong orange shade and very distinct yellow shaft-stripes in *N. musschenbroekii*. The tail is a little shorter than in the latter, of a much darker green above and without an indication of orange tips; below dark brownish green instead of ochre-yellow or orange. It seems also that the red on the breast and middle of abdomen is much more extended." (*Hartert.*)

Hab. S.E. New Guinea.

Forbes and Robinson say:—"We cannot help thinking that *N. pullicauda* must become a synonym of *N. musschenbroeki.*"

NEOPSITTACUS RUBRIPILEUS Salvad.; Forbes & Robins. Bull. Liverp. Mus. i. no. 1, p. 8 (1897); Hartert, Nov. Zool. v. p. 119 (1898); Sharpe, Hand-list, ii. p. 8, n. 4 (1900).

Neopsittacus iris var. *rubripileum* (sic) Dubois, Syn. Av. p. 33 (1899).

Dr. Forbes and Mr. Robinson express some doubt about this form being a good species, but Dr. Hartert, with a large series of specimens collected by Mr. Everett, confirms that *N. rubripileus* is quite a distinct species.

CYCLOPSITTACUS Rchnb.

CYCLOPSITTACUS SALVADORII Oust.; Sharpe, Hand-list, ii. p. 8, n. 1 (1900).

Cyclopsitta salvadorii Dubois, Syn. Av. p. 33, n. 419 (1899); R. & H. Nov. Zool. viii. p. 75 (N. coast of New Guinea, east of Geelvink Bay) (1901).

CYCLOPSITTACUS EDWARDSII Oust.; Madar. Aquila, i. p. 102 (1894); id. Termés. Füzetek, xxii. p. 414 (1895); Sharpe, Hand-list, ii. p. 8, n. 1 (1900).

Cyclopsitta edwardsi Dubois, Syn. Av. p. 33, n. 420 (1899); R. & H. Nov. Zool. viii. pp. 72, 75 (Kaiser Wilhelm's Land) (1901).

Cyclopsittacus purpuratus Madar. Termés. Füzetek, xxv. p. 350, tab. xvii. (Solomon Isl.) (1902); *cf.* R. & H. Ann. Mus. Nat. Hung. 1903, p. 449 (=*edwardsi*).

The Hon. Walter Rothschild and Dr. Hartert not only have identified *C. purpuratus*, but have shown that the habitat "Solomon Islands" was quite a mistake.

The same ornithologists say they have before them a large series of this species from Konstantinhafen, Simbang, and Stephansort, in Kaiser Wilhelm's Land. They notice that "the *adult male* has the breast red, the *female* and young *male* green." They notice that the *young* bird has the cheeks covered with shorter feathers of a yellowish colour with red spots, the ear-coverts narrower and greenish yellow.

CYCLOPSITTACUS DESMARESTI (Garn.); Sharpe, Hand-list, ii. p. 8, n. 3 (1900).

Cyclopsitta desmaresti Dubois, Syn. Av. p. 33, n. 421 (1899).

Cyclopsitta desmaresti desmaresti Rothsch. & Hartert, Nov. Zool. viii. pp. 73, 76 (Kapaur and Dorey) (1901).

CYCLOPSITTACUS OCCIDENTALIS Salvad.; Sharpe, Hand-list, ii. p. 8, n. 4 (1900).

Cyclopsitta desmaresti var. *occidentalis* Dubois, Syn. Av. p. 33 (1899).

Cyclopsitta desmaresti occidentalis Rothsch. & Hartert, Nov. Zool. viii. pp. 73, 76 (1901) (Salwatty, Batanta, and western coast of Berau Peninsula).

Rothschild and Hartert mention specimens intermediate between *C. desmaresti* and *C. occidentalis*.

CYCLOPSITTACUS BLYTHI Wall.; Sharpe, Hand-list, ii. p. 8, n. 5 (1900).

Cyclopsitta desmaresti var. *blythi* Dubois, Syn. Av. p. 33 (1899).

Cyclopsitta desmaresti blythi Rothsch. & Hart. Nov. Zool. viii. pp. 73, 76 (1901).

This form, which inhabits Mysol, is distinguished by the absence of the blue subocular spot; nevertheless, Rothschild and Hartert mention a specimen (*Powell coll.*) in Tring Museum which has an indication of the spot.

CYCLOPSITTACUS CERVICALIS Salvad. & D'Alb.; Sharpe, Hand-list, ii. p. 8, n. 6 (1900).

Cyclopsitta cervicalis Dubois, Syn. Av. p. 33, n. 422 (1899); R. & H. Nov. Zool. viii. pp. 73, 76 (1901).

Rothschild and Hartert mention two young birds collected by E. Weiske on the Upper Brown River.

CYCLOPSITTACUS COXENI Gould; Sharpe, Hand-list, ii. p. 8, n. 7 (1900).

Cyclopsitta coxeni Dubois, Syn. Av. p. 33, n. 423 (1899); R. & H. Nov. Zool. viii. p. 76 (1901).

Rothschild and Hartert allow specific rank to this large Australian form.

CYCLOPSITTACUS MACCOYI Gould; Sharpe, Hand-list, ii. p. 8, n. 8 (1900).

Cyclopsitta maccoyi Dubois, Syn. Av. p. 33, n. 424 (1899).

Cyclopsitta macleayana Rams.; Hartert, Nov. Zool. vi. p. 219, pl. iv. ff. 1, 2 (heads, ♂ ♀) (1899).

Cyclopsitta diophthalmus macleayana R. & H. Nov. Zool. viii. p. 76 (1901).

It is a matter of opinion whether the name *C. macleayana* Rams., published in a newspaper, may have priority of the name *C. maccoyi* duly published in a scientific report.

CYCLOPSITTACUS VIRAGO Hartert, Nov. Zool. ii. p. 61 (Fergusson I.) (1895), iii. p. 245 (1896): Sharpe, Hand-list, ii. p. 9, n. 12 (1900).

Cyclopsitta virago Dubois, Syn. Av. p. 33, n. 426 (1899);

Hartert, Nov. Zool. vi. p. 219, pl. iv. ff. 3, 4 (heads, ♂ ♀) (Fergusson and Goodenough Islands) (1899).

Cyclopsitta diophthalmus virago R. & H. Nov. Zool. viii. p. 76 (1901).

Very similar to *C. aruensis,* but the *male* differs in having a green spot before the eye instead of blue, and the red cheeks separated from the green below by a blue spot, not developed into a complete band as in *P. aruensis.*

The *female* has the sinciput blue, with a red spot in the middle of the forehead. "It differs from the female of *C. aruensis,* which has no red on the forehead. The red spot on the forehead makes it look much more male-like" (*Hartert*). "Iris hazel" (*A. S. Meek*).

Total length about 15 cm.; wing 84–87 mm.; tail 48 mm.; culmen 15 mm.

Hab. D'Entrecasteaux Group: Fergusson and Goodenough Islands.

This species was discovered by Mr. A. S. Meek.

Cyclopsittacus inseparabilis Hartert, Bull. B. O. C. lvi. p. ix (Sudest I.) (1898); id. Nov. Zool. v. p. 530 (1898); id. Ibis, 1899, p. 123; Sharpe, Hand-list, ii. p. 9, n. 13 (1900).

Cyclopsitta inseparabilis Hartert, Nov. Zool. vi. p. 219, pl. iv. f. 7 (head) (1899); Dubois, Syn. Av. p. 33, n. 427 (1899).

Cyclopsitta diophthalmus inseparabilis R. & H. Nov. Zool. viii. p. 76 (1901).

Very similar to the female of *C. virago,* except that the sides of the head are green with a slight yellowish tinge, while they are bluish green in the female of *C. virago.*

Female similar to the male.

Hab. Louisiade Group: Sudest Island (*A. S. Meek*).

Cyclopsittacus diophthalmus (H. & J.); Salvad. Cat. B. Brit. Mus. xx. p. 95 (part.) (1891); Sharpe, Hand-list, ii. p. 8, n. 9. (1900).

Cyclopsitta diophthalma, part., Dubois, Syn. Av. p. 33, n. 425 (1899).

Cyclopsitta diophthalmus diophthalmus R. & H. Nov. Zool.

viii. pp. 73, 76 (Berau Peninsula, Mysol, Waigiu, Salwatty, and Koffiao) (1901).

CYCLOPSITTACUS COCCINEIFRONS Sharpe; id. Hand-list, ii. p. 8, n. 10 (1900).

Cyclopsittacus diophthalmus, part., Salvad. Cat. B. Brit. Mus. xx. p. 95 (1891); Madar. (nec H. & J.), Aquila, i. p. 102 (Bongu, Finisterre Mt.) (1894); id. Termés. Füzetek, 1899, p. 414 (Erima); R. & H. Ann. Mus. Nat. Hung. 1903, p. 449 (=*festetichi*).

Cyclopsitta diophthalma coccineifrons Rchnw. Journ. f. Orn. 1897, p. 208 (Kaiser Wilhelm's Land).

Cyclopsitta diophthalmus coccineifrons R. & H. Nov. Zool. viii. pp. 74, 76 (1901).

Cyclopsittacus festetichi Madar. Termés. Füzetek, xxv. p. 350 (Solomon-Inseln!) (1901); *cf.* R. & H. Ann. Mus. Nat. Hung. 1903, p. 449 (=*diophthalmus*).

The form inhabiting S.E. New Guinea was separated by Dr. Sharpe as *C. coccineifrons*; in the 'Catalogue of Birds' I could not recognise this form as distinct, but Dr. Reichenow says that the birds from Kaiser Wilhelm's Land (similar to those from S.E. New Guinea) have the yellow crown-band wider and purer, the green of the upperside lighter, the red on the cheeks and forehead of a different shade. A. B. Meyer (J. f. O. 1892, p. 256, and Abh. Ber. Dresd. Mus. 1893) quotes similar differences. Still Rothschild and Hartert come to the conclusion that *C. coccineifrons* cannot yet be regarded as a well-established form.

C. festetichi, wrongly described from the Solomon Islands, probably must be attributed to the eastern form of *C. diophthalmus*.

CYCLOPSITTACUS ARUENSIS (Schleg.); Sharpe, Hand-list, ii. p. 8, n. 11 (1900).

Cyclopsitta diophthalma var. *aruensis* Dubois, Syn. Av. p. 33 (1899).

Cyclopsitta aruensis Hartert, Nov. Zool. vi. p. 219, pl. iv. ff. 5, 6 (♂ ♀, heads) (1899).

Cyclopsitta diophthalmus aruensis R. & H. Nov. Zool. viii. pp. 74, 76 (1901).

The birds from the Fly River and from the Brown River have been attributed to *C. aruensis*, but Rothschild and Hartert suspect that they may belong to a form different from the typical, which is from the Aru Islands.

CYCLOPSITTACUS GUGLIELMI III. (Schleg.); Sharpe, Hand-list, ii. p. 9, n. 14 (1900).

Cyclopsitta guglielmi III. Dubois, Syn. Av. p. 33, n. 428 (1899); R. & H. Nov. Zool. viii. pp. 75, 77 (Salwatty and opposite coast of New Guinea) (1901).

This species appears to be the rarest of the genus; in 1901 it was still wanting in Tring Museum, and has not been figured as yet.

CYCLOPSITTACUS SUAVISSIMUS Sclat.; De Vis, Rep. Brit. New Guin., App. p. 81 (Wharton Range) (1898); Sharpe, Hand-list, ii. p. 9, n. 15 (1900).

Cyclopsittacus nanus De Vis, Rep. Brit. New Guin., App. p. 81 (Wharton Range) (1898); Rothsch. Nov. Zool. v. p. 511 (= *suavissimus*) (1898).

Cyclopsitta suavissima Dubois, Syn. Av. p. 34, n. 429 (1899).

Cyclopsitta melanogenia suavissima R. & H. Nov. Zool. viii. pp. 74, 77 (1901).

It appears that *C. nanus* De Vis is established on an abnormal specimen of this species; the length of the wing is 2½ millimetres shorter than in ordinary specimens.

CYCLOPSITTACUS MELANOGENYS (Rosenb.); Sharpe, Hand-list, ii. p. 9, n. 16 (1900).

Cyclopsitta melanogenys Dubois, Syn. Av. p. 34, n. 430 (1899).

Cyclopsitta melanogenia melanogenia R. & H. Nov. Zool. viii. pp. 74, 76 (1901).

D'Albertis found along the Fly River specimens of a *Cyclopsittacus* which I described as a new form (*C. fuscifrons* Salvad. Ann. Mus. Civ. Gen. ix. p. 14, 1870); later on I have united it with *C. melanogenys*; Rothschild and Hartert suggest the propriety of comparing again those specimens with the typical ones from the Aru Islands.

Cyclopsittacus nigrifrons Rchnw.; Sharpe, Hand-list, ii. p. 9, n. 18 (1900).

Cyclopsitta nigrifrons Dubois, Syn. Av. p. 31, n. 131 (1899).

Cyclopsitta nigrifrons nigrifrons R. & H. Nov. Zool. viii. pp. 75, 77 (1901).

Known only from the types in the Berlin Museum.

Cyclopsittacus macilwraithi Rothsch. Bull. B. O. C. vol. vii. p. xxi (N. coast of Brit. N. Guin.?) (1897); id. Ibis, 1898, p. 285; id. Nov. Zool. v. p. 510, pl. xviii. f. 2 (♀) (1898); Dubois, Syn. Av. i. p. 31, n. 132 (1899); Sharpe, Hand-list, ii. p. 9, n. 19 (1900).

Cyclopsitta nigrifrons macilwraithi R. & H. Nov. Zool. viii. pp. 75, 77 (1901).

Similar to *C. nigrifrons*, but "differs in having shorter wing and more bluish forehead" (*R. & H.*). Wing 87 mm.

Hab. British New Guinea.

The validity of this species is now questioned by Rothschild and Hartert.

Cyclopsittacus amabilis Rchnw.; Sharpe, Hand-list, ii. p. 9, n. 18 (1900).

Cyclopsitta nigrifrons var. *amabilis* Dubois, Syn. Av. p. 34 (1899).

Cyclopsitta nigrifrons amabilis R. & H. Nov. Zool. viii. pp. 75, 77 (1901).

"The principal difference between this and the other two forms of *C. nigrifrons* is the much smaller size. Wing 80 to 82 mm" (*R. & H.*). "The forehead is dull dark blue, in colour between the blue of the head of *suavissima* and the black of *C. melanogenia*" (*R. & H.*).

Hab. Eastern New Guinea, from Huon Gulf to Milne Bay and Collingwood Bay.

[To be continued.

XXXVIII.—*On the Birds procured by the Earl of Ranfurly in New Zealand and the adjacent Islands.* By W. R. Ogilvie-Grant.

(Plate XII.)

Towards the end of 1897 a communication was sent to the Earl of Ranfurly, Governor of New Zealand, requesting him, if possible, to obtain examples of birds from that Colony and the adjacent islands for the British Museum (Natural History).

With this object in view, Lord Ranfurly ordered a large number of jars of various sizes to be made, and forwarded them filled with formaline solution to a few gentlemen who had undertaken to assist him. On the 29th December, 1900, Lord Ranfurly started in the Government steamer 'Hinemoa' for the Bluff, and visited the outlying islands—namely, the Snares, Campbell, Auckland, Antipodes, and Bounty. Capt. Hutton, the Curator of the Christchurch Museum, was his guest, and, from his knowledge of natural history, largely assisted in the formation of the collection made during this trip. Dr. Collins, of Wellington, also accompanied the expedition, besides the members of Lord Ranfurly's staff. At each island thorough search was made to procure examples of all the species of birds, and these were immediately treated with formaline after a sketch had been made to shew the colour of the bill, eyes, and feet. The birds were then packed in jars, and forwarded in consignments to the British Museum. As this was a sea-trip, aquatic birds naturally formed a large part of the collection, Cormorants being especially numerous. One of these, obtained on the Bounty Islands, proved to belong to a species hitherto undescribed, and was named *Phalacrocorax ranfurlyi.* Lord Ranfurly had asked the captains of the various British cruisers in New-Zealand waters to get any specimens obtainable, and he had also written to the Resident of the Cook and Harvey Islands with a view to obtaining the birds found on those groups. Subsequently Commander J. P. Rolleston, of H.M.S. 'Archer,' procured living specimens of *P. ranfurlyi* from the Bounty Islands and skins of several other species; Lt. Kennett Dixon, also of H.M.S. 'Archer,' forwarded an example of the rare Merganser (*Merganser australis*) from Auckland Island and a number of other birds in formaline; and Commander R. F. Ayscough, H.M.S. 'Ringdove,' sent the skin of a new species of Weka Rail (*Ocydromus scotti*) from Stewart Island, as well as other skins of birds.

A second trip was made in the year 1901 on the s.s. 'Tutanekai.' Starting on the 20th December, Lord Ranfurly visited the same islands with the addition of the Macquaries, where examples of *Phalacrocorax traversi* were procured. This Cormorant was new to the British Museum Collection. Here also two white examples of the "Nelly" (*Ossifraga gigantea*) were shot. This white form was considered to be extremely rare, as no other specimens were seen.

Two trips were made at other dates to the Cook and Harvey Islands, visiting Penrhyn, Niue, Tonga, and the Kermadecs. As these trips were strictly official, and were entirely occupied by business, no birds could be collected, but jars filled with formaline solution were left at various places with people who undertook to procure specimens. Some of these jars have since been returned, but a large number are still to come, and may in time be productive of good results. The Southern Islands may be generally classed as uninhabited, and, when visiting them, there is therefore no official work to be done.

Obtaining specimens of the Southern Merganser (*Merganser australis*) proved a difficult task. A visit to the comparatively well-known harbours produced no result, and Lord Ranfurly therefore entered every sound in the Auckland Islands, the only place where these Mergansers are known to exist. To show how scarce they are, a gentleman went round the crew of the Government steamer, prior to its sailing from the Bluff, and offered £3 10*s*. to any of the men who would procure a skin for him. As this offer was made with a view to reselling, probably at a large profit, the rareness of this duck may be easily understood.

During these two trips six examples of *Merganser australis* were obtained, and two more young birds were seen, but not disturbed.

Care was always taken not to shoot anything that was not required, and possibly in this way a few birds may have been overlooked. The skins sent from the Kermadecs, collected by the only family residing there, were purchased by Lord Ranfurly and forwarded to the British Museum. This collection consisted entirely of sea-birds, but a number of the skins represented rare species of Petrels, and proved a valuable addition to the National Collection. The trip to the islands was almost invariably accompanied by rough weather, and on one occasion at the Antipodes Island the barometer fell over an inch in twenty-four hours, registering 28·72, giving a warning to make for the open sea, as there was no harbour or even shelter to be found. This move was fully justified, as during the ensuing night it blew a gale and a very high sea was running.

It is difficult to over-estimate the importance of the collections sent home by Lord Ranfurly, and the authorities of the British Museum are deeply indebted to him for the energy that he has displayed in procuring so many valuable specimens. At the same time I should like to take this opportunity of pointing out that there are still many New Zealand birds, skins of which would prove a welcome addition to the Collection, more especially specimens of the species to be found in the North Island and in Stewart Island.

I.—BIRDS FROM NEW ZEALAND, THE KERMADEC ISLANDS, AND THE ISLANDS TO THE SOUTH OF NEW ZEALAND.

1. APTERYX AUSTRALIS Shaw.

Apteryx australis Salvad. Cat. B. Brit. Mus. xxvii. p. 604 (1895).

a, b. Adult ♂ et ♀ immature. Dusky Bay, Otago District, South Island, January 1901 (*R. Henry*).

c, d. ♂ ♀ adult. Dusky Bay, 24th June, 1901.

e–g. ♂ ♀ immature. Dusky Bay.

h. Adult (in spirits). Dusky Bay.

Mr. Richard Henry, who is in charge of the "Bird Reserve" on Resolution Island, has supplied Lord Ranfurly with the following notes, in continuation of those already published in the 'Transactions of the New Zealand Institute,' vol. xxx. p. 288 (1897):—

"Though the greater part of the Roas' food consists of earthworms, they no doubt eat all sorts of insects, including many things they get out of water-holes, for I often see their tracks in muddy places, and captives are fond of dabbling in their water-tins. Last August two Roas were killed by my dog, which had managed to get rid of its muzzle. The stomachs of these birds were full of Miro-berries, the hard stones of which were completely digested, and had probably been eaten for the sake of the little kernels; the birds were quite fat. On Mt. Bradshaw, in Dec. 1898, I found two Roas in the open grass country far away from the forest, but this is the only instance of the kind that has come under my notice. One of these birds, which I had to wake up, looked at me more in surprise than fear, and when I put it down settled itself once more in its 'form' under a big tussock and went to sleep again; it evidently knew nothing of enemies of any sort.

"I put a pair of Roas on Parrot Island, and on the 15th November found the male hatching a fresh egg in the same nest which contained a tiny little chicken; so it is evident this bird sometimes breeds twice in the season.

"We did not see the mother at all. She was probably recovering after producing her great egg, which was 5 inches long and 3¼ inches in diameter, and weighed 18 ounces. The male probably weighed about 5 lbs. and the female about 7 lbs., for I have often weighed specimens out of curiosity.

"I think that the little chickens find their own food almost as soon as they can walk, and require only a little warmth from the parents.

"When I kept little ones they always foraged for themselves, and refused the large worms which the old ones liked.

"As a rule, one finds Roas in pairs in the same den, and they are sometimes accompanied by the last year's young bird, which is nearly as big as themselves, but much darker in colour.

"When single birds are found they are always females if full-grown, and it would seem that the females are more numerous than the males. This was very noticeable in Dusky Sound, where males were always in demand to make up pairs.

"Their habits are curious: the males always stay at home to 'nurse the baby,' and do it well: while the females, which are both larger and more courageous, as well as more numerous, do most of the courting and fighting.

"The beak of the female is about 6 inches long and has the curve near the point, while that of the male is at least an inch shorter and has the curve near the middle.

"The habits and manners of the Kiwi (*Apteryx oweni*) are much like those of the Roas, but instead of frequenting the shady forests they live mostly in rocky and scrubby places."

2. HYPOTÆNIDIA PHILIPPINENSIS (Linn.).

Hypotænidia philippinensis Sharpe, Cat. B. Brit. Mus. xxiii. p. 39 (1894).

a. Adult. ? South Island, New Zealand.

This Rail was sent home in a jar containing Shags from Bounty Island; the locality whence it was obtained was not indicated, but was probably South Island.

Like *H. macquariensis* Hutton, it has a patch of maroon feathers on the chest above the middle of the rust-coloured pectoral band, but in other respects it resembles typical *H. philippinensis*.

3. PORZANA AFFINIS (Gray).

Porzana affinis Sharpe, Cat. B. Brit. Mus. xxiii. p. 106 (1894).

a. ♂ adult. N. Canterbury, South Island, New Zealand, 23rd August, 1893.

4. Ocydromus australis (Sparrm.).

Ocydromus australis Sharpe, Cat. B. Brit. Mus. xxiii. p. 65 (1894).

a, *b*. Adult (in spirits) and immature. Geraldine Dist., Canterbury, South Island, N.Z., July 1901.

The immature specimen of the South-Island Wood-hen has the iris brown, and the bill brown, reddish on the culmen.

Mr. Richard Henry, of Resolution Island, in continuation of his notes on this species published in the 'Transactions of the New Zealand Institute,' vol. xxx. pp. 279–288 (1897), writes:—

"All the young Wekas are wanderers and trespassers for perhaps a year after they are turned away from home, and during this time are hunted and chased by every old Weka that sees them, but especially by their own fathers and mothers. Fortunately the youngsters are generally the best runners, so that they can get out of danger, but they are severely tested to prove their ability to obtain and defend a home before they settle down and get married. There appears to be no fighting for wives, as is the case with most other creatures. Females seem to be plentiful and fight among themselves; and the fight between the males is distinctly for the exclusive right to their feeding-grounds.

"I have now had six or seven years' experience of them, and those living near the house are tamer than ordinary fowls. One pair has been with me for five years, and during that time I never saw them ten yards outside of their boundary.

"The domains of two other pairs meet on a grass plot near the house, and on rare occasions the whole six of them may be seen within ten yards of each other, all on their own ground and respecting each other's rights.

"If the female dies or is taken by a hawk the male soon takes another mate, but if the male dies his place is taken by another male and his wife.

"The eggs take nearly a month to hatch, and for some time previously the birds are very busy about the nest, so that it may be 40 days before they bring the weakly little chickens to the beach, and during all that time they go backwards and forwards over the ground till they make a regular beaten track by which they can easily be followed to the nest. Should I attempt to take the eggs, the sitting bird, whether it be male or female, will not leave the nest, and resists being pulled off with all its might. It pecks at one's hand, but never hard enough to break the skin. Wekas sleep in some warm spot on the ground, and are consequently easily attacked and killed by stoats and weasels. I mention this, because even the most intelligent of our people attribute the destruction of the Wekas to the poisoned grain laid for

Text-fig. 33.

South-Island Wood-hen and Nest.

rabbits; and this, after the wholesale importation of ferrets, weasels, and stoats.

"Three young ones are the most I have seen in one family in Dusky Sound, but I once found four eggs in a nest at Te Anau Lake before the introduction of ferrets, and in the 'grasshopper-days' I have counted as many as six eggs in a nest on the Middle Dome near Lumsden."

Three eggs from Dusky Sound are of the usual type, but one of them is somewhat longer than any of those in the British Museum Collection and measures 2·5 by 1·58 inches.

5. **Ocydromus brachypterus** (Lafr.).

Ocydromus brachypterus Sharpe, Cat. B. Brit. Mus. xxiii. p. 67 (1894).

a. Immature. Dusky Sound, Otago District, South Island.

b, *c*. Adult. South Island, Jan. 1901.

Two adult specimens of the Black Wood-hen have the plumage, especially of the upper parts, very deep black, each feather being faintly edged with dark rufous; an immature bird has the chest and wings spotted with rufous.

6. **Ocydromus scotti** Grant.

Ocydromus scotti Grant, Bull. B. O. C. xv. no. cxvi. p. 78 (1905).

Adult male (type of the species). Most nearly allied to *O. earli* G. R. Gray, but may be at once distinguished by its much smaller size, and by having the general colour of the plumage of the upper parts chestnut and black. Feathers of the top of the head, hind-neck, mantle, inner scapulars, and innermost secondaries black, widely margined on the sides with chestnut; primary and secondary quills, wing-coverts, and outer scapulars black, with bars or wedge-shaped marks of chestnut along the margins; marginal coverts uniform reddish-brown; lower back and rump uniform dark chestnut-brown; upper tail-coverts and tail-feathers black, the terminal half margined and the basal half barred with chestnut; a short whitish eyebrow-stripe extending from the lores to above the eye; chin, cheeks, and throat greyish;

fore-neck and chest chestnut, spotted with black (in this respect somewhat resembling immature specimens of *O. earli*) ; middle of the breast and belly greyish-brown, shading into dull greyish-rufous on the sides and flanks, some of the feathers of the former with the middle barred with chestnut and black; under tail-coverts chestnut barred with black. Upper mandible slaty-brown ; lower mandible flesh-colour at the base, slate-colour towards the tip ; legs red, darkish brown on the hinder aspect of the tarsus.

Total length in the flesh 18 inches; culmen 1·8 ; wing to the end of the secondaries 6·5 ; tail 4·6 ; tarsus 2·15.

Male (type). Port Pegasus, Stewart Island, New Zealand, 8th October, 1899. Weight 22¾ oz. Obtained by Commander R. F. Ayscough, R.N., H.M.S. 'Ringdove.'

"The specimen was shot when feeding along the beach (wooded), close to the water's edge."—R. F. A.

Adult female similar to the male.

Eight examples of *Ocydromus* procured by Dr. E. A. Wilson on the Macquarie Islands undoubtedly belong to this species, and are no doubt the descendants of birds imported there from Stewart Island.

Dr. Wilson has kindly furnished me with coloured sketches shewing the soft parts of the adult males and females procured in November on Macquarie Island :—Iris red ; bill reddish towards the base, dusky along the culmen, and inclining to blackish at the tip ; legs and feet reddish flesh-colour, tarsi brown on the hinder aspect.

7. APTENODYTES PATAGONICA Forster.

Aptenodytes pennanti Filhol, Mém. Ac. France, Pass. Vénus, Miss. de l'Ile Campbell, iii. pt. ii. p. 57 (1885).

Aptenodytes patagonica Grant, Cat. B. Brit. Mus. xxvi. p. 627 (1898).

a. Adult. New Zealand.

8. PYGOSCELIS PAPUA Forster.

Pygoscelis papua Grant, Cat. B. Brit. Mus. xxvi. p. 631 (1898).

a. Adult. Macquarie Island, 13th January, 1902.

This Penguin has the bill yellowish-orange, black toward the tip; feet orange-yellow (*F. W. Hutton*).

9. CATARRHACTES CHRYSOCOME Forster.

Eudyptes chrysocoma Filhol, Mém. Ac. France, Pass. Vénus, Miss. d'Ile Campbell, iii. pt. ii. p. 58 (1885).

Catarrhactes chrysocome Grant, Cat. B. Brit. Mus. xxvi. p. 635 (1898).

Filhol records the Rock-hopper as numerous in small parties on Campbell Island from October onwards.

Capt. Hutton writes:—"It is common on the Antipodes, where, according to Capt. Bollons, it commences to breed at the end of September, forming its rookeries higher up than those of *C. sclateri*. It does not breed on either the Snares or Bounty Islands. The colour of the iris is red."

10. CATARRHACTES PACHYRHYNCHUS G. R. Gray.

Catarrhactes pachyrhynchus Grant, Cat. B. Brit. Mus. xxvi. p. 638 (1898).

a. Adult. Snares, 7th January, 1902.

Capt. Hutton says:—"This Rock-hopper Penguin is abundant on the Snares, and, according to Capt. Bollons, it commences to breed in the first week in September. It was not met with on the Bounty Island."

Three eggs from Dusky Sound, Otago District, are of a pale bluish-white: two are of a broad-oval shape, and measure respectively 2·8 by 2·25 and 2·8 by 2·2 inches; the third is somewhat smaller and of a pointed oval shape, and measures 2·75 by 2·0 inches.

11. CATARRHACTES SCLATERI (Buller).

Catarrhactes sclateri Grant, Cat. B. Brit. Mus. xxvi. p. 640 (1898).

Catarrhactes vittatus (Finsch); Grant, *l. c.* p. 638 [part.].

Captain Hutton writes:—"Sclater's Rock-hopper is very abundant on the Antipodes and Bounty Islands, and Capt. Bollons informs me it commences to breed there in the middle of September. The iris is brown. Young in down have the chin and throat black, but the first feathers on these parts are pale grey, and in this stage of plumage the species was described as *Eudyptes vittata* Finsch." In a previous letter, dated the 8th November, 1900, he says:—"I find on again examining the types of *Eudyptes vittata,* with the help of your book (*cf.* Grant, Cat. B. Brit. Mus. xxvi. p. 638), that of the two examples in the Canterbury Museum one belongs to *C. pachyrhynchus* and one to *C. sclateri.*"

12. CATARRHACTES SCHLEGELI Finsch.

Catarrhactes schlegeli Grant, Cat. B. Brit. Mus. xxvi. p. 643 (1898).

a. Adult (albino). Macquarie Island.

13. MEGADYPTES ANTIPODUM (Homb. & Jacq.).

Megadyptes antipodes Filhol, Mém. Ac. France, Pass. Vénus, Miss. de l'Ile Campbell, iii. pt. ii. p. 59 (1885).

Megadyptes antipodum Grant, Cat. B. Brit. Mus. xxvi. p. 644 (1898).

Recorded by Filhol from Campbell Island.

Capt. Hutton writes:—"According to Capt. Bollons, the Yellow-crowned Penguin breeds on Stewart, Auckland, and Campbell Islands early in September. It does not form rookeries, but associates in small groups of from ten to twelve. The iris is pale orange-yellow; the bill reddish-brown, white towards the base of the lower mandible; and the legs and feet are pale flesh-colour."

14. CYMODROMA MELANOGASTER (Gould).

Cymodroma melanogaster Salvin, Cat. B. Brit. Mus. xxv. p. 364 (1896).

Two eggs, believed to be of this species, procured on the North Island, New Zealand, were forwarded by Lord Ranfurly.

15. PUFFINUS CHLORORHYNCHUS Less.

Puffinus chlororhynchus Salvin, Cat. B. Brit. Mus. xxv. p. 372 (1896).

a, b. Adult. Kermadec Islands.

16. Puffinus assimilis Gould.

Puffinus assimilis Salvin, Cat. B. Brit. Mus. xxv. p. 384 (1896).

a, b. Adult. Kermadec Islands.

17. Puffinus griseus (Gmel.).

Puffinus griseus Buller, B. New Zeal. ii. p. 232 (1888); Salvin, Cat. B. Brit. Mus. xxv. p. 386 (1896).

Puffinus tristis J. R. Forster; Filhol, Mém. Ac. France, Pass. Vénus, Miss. de l'Ile Campbell, iii. pt. ii. p. 53 (1885).

The Sooty Shearwater was found on all the islands. Captain Bollons reports that it commences to breed at the Snares in the middle of January, while at Stewart Island it does not begin before the end of January (*F. W. Hutton*).

18. Œstrelata lessoni Garnot.

Œstrelata lessoni Buller, B. New Zeal. ii. p. 219 (1888); Salvin, Cat. B. Brit. Mus. xxv. p. 401 (1895).

a. Adult. Antipodes I., 13th January, 1901.

Iris black; bill black; feet and legs pale flesh, terminal half of outside web black.

The White-headed Petrel breeds in holes on the Antipodes, fresh eggs being found in the middle of January (*F. W. Hutton*).

19. Œstrelata macroptera (Smith).

Œstrelata macroptera Salvin, Cat. B. Brit. Mus. xxv. p. 399 (1896).

a. Adult. Kermadec Islands.

20. Œstrelata cervicalis Salvin.

Œstrelata cervicalis Salvin, Cat. B. Brit. Mus. xxv. p. 411, pl. vi. (1896).

a–e. Adult. Kermadec Islands.

Only one example of Salvin's Capped Petrel existed in the British Museum Collection, and the five adult specimens sent home by Lord Ranfurly may be regarded as an important addition.

Though very closely allied to *Œ. externa* Salvin, the present species appears to differ constantly in having the under wing-coverts along the edge of the wing mostly black. Salvin has stated that the upper parts in *Œ. cervicalis* are "much darker" than in *Œ. externa*; but our present series shews that this is not really the case, as some birds from the Kermadecs have the upper parts perfectly similarly coloured to the type from Masafuera Island, on the coast of Chile.

21. ŒSTRELATA NEGLECTA (Schl.).

Œstrelata neglecta Salvin, Cat. B. Brit. Mus. xxv. p. 412 (1896).

a–d. Adult et immature. Kermadec Islands.

The colour of the under parts of three adult birds varies considerably: one has the throat, neck, &c. sooty; the second specimen has these parts brownish-grey; while in the third they are whitish, tinged with grey. The young bird is much lighter in colour than the adult, and has the under parts mostly white, the feathers of the cheeks and throat being edged with dusky, while some of the breast- and flank-feathers are similarly fringed with dusky.

In all phases of plumage, even in the most dusky, this species may be distinguished from the sooty-coloured *Œ. macroptera* by having the shafts of the primary-quills mostly white, while in the latter they are dusky to the base; the bill, moreover, in the present species is much smaller, the nail especially being less developed than in *Œ. macroptera.*

22. ŒSTRELATA NIGRIPENNIS Rothsch.

Œstrelata nigripennis Salvin, Cat. B. Brit. Mus. xxv. p. 409 (1896).

a–d. Adult. Kermadec Islands.

e. ♂ adult. Curtis I., Kermadec Islands, 5th November, 1901.

The Black-winged Petrel was originally described by Mr. Rothschild from specimens procured at the Kermadec Islands, and the present examples are similar to two of the typical specimens presented by that gentleman to the British Museum.

23. **Ossifraga gigantea** (Gmel.).

Ossifraga gigantea Filhol, Mém. Ac. France, Pass. Vénus, Miss. de l'Ile Campbell, iii. pt. ii. p. 51 (1885); Buller, B. New Zeal. ii. p. 225 (1888); Salvin, Cat. B. Brit. Mus. xxv. p. 422 (1896).

a. Adult [white phase]. Macquarie Island, 13th January, 1902.

Lord Ranfurly, writing of the Giant Petrel, says:—"White 'Nellys' were seen on more than one occasion at the Snares, on Campbell Island, and about six at Macquarie Island. The albino pair shot were both alike in plumage, each having the same amount of slaty-black feathers." The other specimen was forwarded to the Hon. Walter Rothschild.

Captain Bollons states that the birds commence to breed at the Antipodes early in September. The plumage of the young is similar to that of the adult (*J. W. Hutton*).

24. **Daption capensis** (Linn.).

Procellaria capensis Filhol, Mém. Ac. France, Pass. Vénus, Miss. de l'Ile Campbell, iii. pt. ii. p. 54 (1885).

Daption capensis Buller, B. New Zeal. ii. p. 215 (1888); Salvin, Cat. B. Brit. Mus. xxv. p. 428 (1896).

Captain Hutton writes:—"The 'Cape Pigeon' was very abundant in January at the Snares and Antipodes. No doubt it breeds at both places, but its nest has not been found. A few were seen at the Auckland and Campbell Islands, but none were observed at sea in January."

25. **Prion vittatus** (Gmel.).

Prion vittatus Filhol, Mém. Ac. France, Pass. Vénus, Miss. de l'Ile Campbell, iii. pt. ii. p. 55 (1885); Buller, B. New Zeal. ii. p. 212 (1888); Salvin, Cat. B. Brit. Mus. xxv. p. 432 (1896).

Recorded by Filhol from the neighbourhood of Campbell Island.

26. **Prion banksi** Gould.

Prion banksi Buller, B. New Zeal. ii. p. 211 (1888); Salvin, Cat. B. Brit. Mus. xxv. p. 434 (1896).

a. ♂ adult. Adam I., Auckland Is., 7th January, 1901.

Banks's Petrel has the iris dark brown, the bill blue, the ridge of culmen and nostril black, the legs and feet blue. It breeds on the Auckland Islands (*F. W. Hutton*).

27. Prion desolatus (Gmel.).

Prion desolatus Salvin, Cat. B. Brit. Mus. xxv. p. 434 (1896).

Prion turtur (Kuhl); Filhol, Mém. Ac. France, Pass. Vénus, Miss. de l'Ile Campbell, iii. pt. ii. p. 55 (1885); Buller, B. New Zeal. ii. p. 209 (1888).

The Dove-Petrel breeds on Antipodes Island (*F. W. Hutton*).

28. Diomedea exulans Linn.

Diomedea exulans Filhol, Mém. Ac. France, Pass. Vénus, Miss. de l'Ile Campbell, iii. pt. ii. p. 44 (1885); Buller, B. New Zeal. ii. p. 189, pl. (upp. fig.) (1888); Salvin, Cat. B. Brit. Mus. xxv. p. 441 (1896).

Capt. F. W. Hutton writes:—"Capt. Bollons informs me that the Wandering Albatros commences to breed on Adam Island, Auckland Group, in the first week in January; while on the Antipodes the breeding-season does not begin until the middle of January. The eyelids in the adult are pale purple. The young of the second year have the plumage chocolate-brown (except the forehead, sides of the head, and upper part of the throat, which are white). In the third year the plumage gradually becomes white—first on the abdomen, next on the back, then on the neck, and, lastly, on the top of the head. Possibly the Antipodes birds never become white on the crown, as they are found breeding with the top of the head still covered with dark feathers."

29. Diomedea regia Buller.

Diomedea exulans Buller (nec Linn.), B. New Zeal. ii. p. 189, pl. (lower fig.) (1888).

Diomedea regia Buller, Trans. New Zeal. Inst. xxiii. p. 230 (1891); Salvin, Cat. B. Brit. Mus. xxv. p. 443 (1896).

According to Capt. Hutton, "the Royal Albatros breeds on Campbell Island and on the east end of Adam Island, Auckland Group, but is no longer found on Enderby Island.

Capt. Bollons stated that the species commenced to breed in the middle of November, and during Lord Ranfurly's visit on the 10th of January eggs were found in an advanced state of incubation."

The British Museum has recently received an immature example of this species procured on Campbell Island, 20th October, by Commander R. F. Ayscough, R.N., H.M.S. 'Ringdove.'

30. Diomedea melanophrys Boie.

Diomedea melanophrys Filhol, Mém. Ac. France, Pass. Vénus, Miss. de l'Ile Campbell, iii. pt. ii. p. 51 (1885); Buller, B. New Zeal. ii. p. 198 (1888); Salvin, Cat. B. Brit. Mus. xxv. p. 447 (1896).

Captain Hutton writes:—"The Black-browed Albatrós is very abundant on Campbell Island, where, according to Capt. Bollons, it commences to breed in the second week of September. The young appear to resemble the old birds."

31. Diomedea bulleri Roths.

Diomedea bulleri Salvin, Cat. B. Brit. Mus. xxv. p. 448 (1896).

According to Capt. F. W. Hutton, this species, which he alludes to as *Thalassogeron culminatus* (Gould), breeds on the Snares, the nesting-season commencing at the latter end of January. It is a common bird in the New Zealand seas. In the young the plumage of the whole head and neck is brown.

32. Diomedea cauta Gould.

Thalassogeron cautus Salvin, Cat. B. Brit. Mus. xxv. p. 449 (1896).

Thalassogeron layardi Salvin, Cat. B. Brit. Mus. xxv. p. 450 (1896).

Captain Hutton remarks:—"The Shy Albatros nests on the Bounty Islands, the breeding-season commencing, according to Capt. Bollons, at the latter end of August.

"In the young the sides of the head and neck are grey (we saw very few with pure white head and neck); the latericorn of the bill is bluish-yellow, not dirty yellow as in the adult. The species is easily recognised by its stout bill, of which the least depth measures 1·2 inch, and also by the black line at the base.

"The nests are solid structures made of guano."

The only example of this species in the British Museum may be at once distinguished by having the sides of the neck and the greater part of the basal two-thirds of the inner webs of the primaries white; these additional characters do not appear to have been recorded when distinguishing this species from *D. salvini.*

Mr. Walter Rothschild has kindly lent me for examination three examples of the so-called Layard's Albatros procured in New Zealand waters. After carefully comparing these with the types of *Diomedea cauta* Gould, and *Thalassogeron layardi* Salvin, we have no doubt whatever that the latter name is synonymous with the former, the type of *D. cauta* being merely an older and slightly larger bird.

We have also studied the description and figure of *Diomedea platei* Reichenow, from Chile (*cf.* J. f. O. 1899, p. 118, and 1900, p. 244, fig.), and have satisfied ourselves that it is founded on an immature specimen of *D. cauta.*

33. Diomedea salvini (Rothsch.).

Diomedea cauta Buller, B. New Zeal. ii. p. 203 (1888).

Thalassogeron salvini Salvin, Cat. B. Brit. Mus. xxv. p. 450 (1896).

Captain Hutton writes:—"There is a specimen of Salvin's Albatros in the Christchurch Museum which, together with an egg, was procured on the Bounty Islands.

"Captain Bollons assures me that he has never seen any species of 'Molly-mawks' on the Antipodes Islands, and it is now certain that none breed there, but that both *D. cauta* and *D. salvini* breed on the Bounty Islands.

"The bill in the present species is less stout than in *D. cauta,* its least depth measuring 1 inch, the membrane separating the culminicorn from the latericorn is very narrow, and there is no sign in the dried specimen of a black line at the base of the bill."

The present species differs from *D. cauta* in having the sides of the neck grey and the inner webs of the primaries brown, characters which appear to be of importance, but have not hitherto been noticed.

34. DIOMEDEA CHLORORHYNCHA Gmel.

Diomedea chlororhyncha Filhol, Mém. Ac. France, Pass. Vénus, Miss. de l'Ile Campbell, iii. pt. ii. p. 51 (1885); Buller, B. New Zeal. ii. p. 202 (1888).

Thalassogeron chlororhynchus Salvin, Cat. B. Brit. Mus. xxv. p. 451 (1896).

According to Filhol, this species breeds on Campbell Island.

Captain Hutton writes:—"There is a specimen in the Christchurch Museum from the coast of New Zealand."

35. PHŒBETRIA CORNICOIDES.

Diomedea fuliginosa var. *cornicoides* Hutton, Ibis, 1867, pp. 186, 192.

Diomedea fuliginosa Filhol, Mém. Ac. France, Pass. Vénus, Miss. de l'Ile Campbell, iii. pt. ii. p. 50 (1885).

This species appears to me to be quite distinct from *P. fuliginosa.*

Captain Hutton writes:—"According to Capt. Bollons, the Sooty Albatros breeds on the cliffs of the Antipodes, Auckland, and Campbell Islands, commencing at the latter end of October. I think that *P. cornicoides* should be recognised as a distinct form."

36. GARRODIA NEREIS Gould.

Garrodia nereis Salvin, Cat. B. Brit. Mus. xxv. p. 361 (1895).

a. ♀ adult. Adam I., Auckland Is., 7th January, 1901.

The Grey-backed Storm-Petrel has the iris black and the bill and feet jet-black (*F. W. Hutton*).

37. GYGIS CANDIDA (Gmel.).

Gygis candida Saunders, Cat. B. Brit. Mus. xxv. p. 149 (1896).

a–c. Adult. Kermadec Is.

38. Procelsterna cinerea (Gould).

Procelsterna cinerea Saunders, Cat. B. Brit. Mus. xxv. p. 135 (1896).

a–c. Adult. Dusky Sound, Otago District, South Island, New Zealand, June 1901.

The Little Noddy has only once before been obtained in New Zealand [*cf.* Buller, B. New Zeal. ii. p. 78 (1888)].

39. Sterna vittata Gmel.

Sterna vittata Saunders, Cat. B. Brit. Mus. xxv. p. 51 (1896).

a. Adult *. Bounty Is., 15th January, 1901.

b, c. ♂ ♀ adult. Antipodes I., 14th January, 1901.

d, e. ♀ adult et ♂ immature. Campbell Is., 10th January, 1901.

Iris black; bill crimson; legs reddish-orange. In young birds the bill is black, reddish at the base of the mandibles, and the legs are blackish-red (*F. W. Hutton*).

This Tern appears to have been common at the above-mentioned islands.

40. Sterna fuliginosa Gmel.

Sterna fuliginosa Saunders, Cat. B. Brit. Mus. xxv. p. 106 (1896).

a–d. Kermadec Islands.

Two eggs of the Sooty Tern sent from Sunday Island, Kermadec Islands, are of the usual type and similar to the specimens described in the British Museum Catalogue.

41. Larus scopulinus Gray.

Larus scopulinus Buller, B. New Zeal. ii. pp. 55, 62 (1888); Filhol, Mém. Ac. France, Pass. Vénus, Miss. de l'Ile Campbell, iii. pt. ii. p. 40 (1885); Saunders, Cat. B. Brit. Mus. xxv. p. 238 (1896); Sharpe, Rep. Birds 'Southern Cross' Exped. p. 165 (Campbell I.), 1902.

Captain F. W. Hutton reports the Mackerel-Gull from the Auckland Islands; it was not met with on the Bounty or Antipodes Islands.

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* It had not previously been recorded from the Bounty Islands; unfortunately the above-mentioned specimen, being in a bad state, could not be preserved.

42. Larus dominicanus Licht.

Larus dominicanus Buller, B. New Zeal. ii. p. 47 (1888); Filhol, Mém. Ac. France, Pass. Vénus, Miss. de l'Ile Campbell, iii. pt. ii. p. 38 (1885).

Captain F. W. Hutton says:—"The Southern Black-backed Gull was common on all the islands."

43. Megalestris antarctica (Lesson).

Megalestris antarctica Saunders, Cat. B. Brit. Mus. xxv. p. 319 (1895).

Stercorarius antarcticus Filhol, Mém. Ac. France, Pass. Vénus, Miss. de l'Ile Campbell, iii. pt. ii. p. 41 (1885); Buller, B. New Zeal. ii. p. 63 (1888).

Captain Hutton writes:—"The Southern Skua is common on all the islands. Captain Bollons states that it commences to breed in September."

44. Arenaria interpres (Linn.).

Arenaria interpres Sharpe, Cat. B. Brit. Mus. xxiv. p. 92 (1896).

a, b. ♀ adult. Lake Ellesmere, Canterbury, New Zealand, 10th February, 1902.

The Turnstone has the legs yellowish-pink (*F. W. Hutton*).

45. Hæmatopus unicolor Wagler.

Hæmatopus unicolor Sharpe, Cat. B. Brit. Mus. xxiv. p. 88 (1896).

a. ♂ adult. Port Pegasus, Stewart I., 1st January, 1901.

The Black Oyster-catcher has the iris yellow, the naked skin round the eye and bill orange, the legs and feet brownish-grey (*F. W. Hutton*).

46. Charadrius dominicus P. L. S. Müll.

Charadrius dominicus Sharpe, Cat. B. Brit. Mus. xxiv. p. 195 (1896).

a. Immature. Lake Ellesmere, Canterbury, 1st February, 1902.

47. **HIMANTOPUS PICATUS** Ellman.

Himantopus picatus Sharpe, Cat. B. Brit. Mus. xxiv. p. 319 (1896).

a, b. Adult et vix adult. New Zealand.

These birds were sent home in a jar of formaline, along with Cormorants, from the Bounty Islands. They bore no particulars respecting the locality, &c., where they were obtained, but were probably from South Island.

48. **LIMOSA NOVÆ ZEALANDIÆ** G. R. Gray.

Limosa novæ zealandiæ Buller, B. New Zeal. ii. pts. viii. & ix. p. 40, pl. iv. (1888); Sharpe, Cat. B. Brit. Mus. xxiv. p. 377 (1896).

a. Adult. Lake Ellesmere, Canterbury, New Zealand, 27th January, 1902.

49. **LIMOSA HUDSONICA** (Lath.).

Limosa hudsonica Sharpe, Cat. B. Brit. Mus. xxiv. p. 388 (1896).

a. ♀ adult. Lake Ellesmere, Canterbury, New Zealand, 4th March, 1902.

Iris hazel; bill brownish-black, base of the mandible pinkish; legs and feet brownish-black (*F. W. Hutton*).

This example of the Hudsonian Godwit was forwarded to the British Museum, at Lord Ranfurly's request, by Captain Hutton. It is the first example of this species that has been recorded from New Zealand, its range being restricted to the New World, where it extends from Arctic America to the Falkland Islands.

50. **TRINGA CANUTUS** Linn.

Tringa canutus Sharpe, Cat. B. Brit. Mus. xxiv. p. 593 (1896).

a, b. Adult. Lake Ellesmere, Canterbury, New Zealand, 1st February, 1902.

The Knot is an occasional visitor to New Zealand, and the specimens procured are generally in winter plumage.

51. **TRINGA SUBARQUATA** (Güldenst.).

Ancylochilus subarquatus Sharpe, Cat. B. Brit. Mus. xxiv. p. 586 (1896).

a. Adult ♀. Lake Te Anau, Otago, South Island, New Zealand, March 1903.

b. Immature ♂. Lake Ellesmere, Canterbury, South Island, New Zealand, 3rd February, 1902.

The Curlew-Sandpiper appears to be new to the avifauna of New Zealand. Specimen *b* was at first identified by Captain Hutton as a Pectoral Sandpiper (*Heteropygia acuminata*), and subsequently referred by him to the Red-throated Stint (*Limonites ruficollis*).

52. Gallinago aucklandica Gray.

Gallinago aucklandica Buller, B. New Zeal. ii. pt. viii. p. 32 (1888).

a, b. ♂ adult. Adam I., Auckland Is., 7th & 8th January, 1901.

c. ♂ adult. Antipodes Is. (*J. P. Rolleston*), 15th July, 1901.

d. ♀ adult. „ „ 28th Feb., 1899.

The Auckland-Island Snipe has the iris hazel, the bill brown, and the legs and feet brownish- or greenish-yellow. It was not common on Adam Island (*F. W. Hutton*).

53. Gallinago huegeli Tristram.

Gallinago huegeli Tristram, Bull. B. O. C. i. no. ix. p. xlvi (1893) [Snares].

a. b. ♂ ♀ adult. Snares, 2nd January, 1901.

c. Snares, 7th January, 1902.

The Snares-Island Snipe has the iris dark brown and the legs and feet greyish-brown.

Capt. F. W. Hutton, in his notes, speaks of having met with this species on "Snares and Antipodes Islands. It was rare on Antipodes, and as we did not see this species on the Auckland Islands I think the locality is a mistake."

Capt. Hutton's notes as regards Antipodes and Auckland Islands evidently refer to *G. aucklandica.*

54. Anas superciliosa Gmel.

Anas superciliosa Buller, B. New Zeal. ii. p. 251 (1888); Filhol, Mém. Ac. France, Pass. Vénus, Miss. de l'Ile Campbell, iii. pt. ii. p. 38 (1885).

a. ♂ adult. Enderby I., Auckland Is., 3rd January, 1901.

The Grey Duck has the iris hazel, the legs flesh-colour, and the webs dusky. It is not uncommon on the Auckland Islands, and also occurs on Campbell Island, though we did not meet with it there (*F. W. Hutton*).

55. Nesonetta aucklandica G. R. Gray.

Nesonetta aucklandica Buller, B. New Zeal. ii. pts. xii. & xiii. p. 263, pl. v. (lower fig.) (1888); Salvad. Cat. B. Brit. Mus. xxvii. p. 289 (1895).

a–c. ♂ adult. Enderby I., Auckland Is., 3rd January, 1901.

The Auckland-Island Duck has the iris dark brown, the bill slaty-grey, and the legs and feet yellowish-brown, with the webs darker. It is not uncommon on the Auckland Islands, but is local. When approached, it makes no attempt to fly (*F. W. Hutton*).

56. Hymenolæmus malacorhynchus (Gmel.).

Hymenolæmus malacorhynchus Buller, B. New Zeal. ii. pts. xii. & xiii. p. 276, pl. v. (1888); Salvad. Cat. B. Brit. Mus. xxvii. p. 455 (1895).

a, b. Adult et juv. Geraldine Dist., Canterbury, South Island, N.Z., October 1901.

c, d. Adult et juv. (in spirits). Geraldine Dist., Canterbury, South Island, N.Z., October 1901.

These examples of the Soft-billed Duck were procured for Lord Ranfurly by the Hon. L. Walker, M.L.C.

57. Merganser australis (Hombr. & Jacq.).

Mergus australis Buller, B. New Zeal. ii. p. 279 (1888).

Merganser australis Salvad. Cat. B. Brit. Mus. xxvii. p. 485 (1895).

a, b. ♂ ♀ adult. McLelland's Inlet, Auckland Is., 5th January, 1901.

The pair were shot together; only one other pair was seen besides those procured.

c. ♀ adult. Carnley Harbour, Auckland Is., 9th July, 1901 (*Commander J. P. Rolleston*).

d–f. Skeletons of specimen *c* and of an adult pair in the possession of Lord Ranfurly.

Iris dark brown; culmen and tip of lower mandible black, cutting-edge of upper mandible and rest of lower mandible yellowish-orange; legs and feet orange; webs, joints, and soles dusky.

We found the Southern Merganser very rare on the Auckland Islands; it flies well (*F. W. Hutton*).

In addition to the above, the British Museum has recently received an adult male of this bird from Auckland Islands, presented by Lieut. Kennett Dixon, R.N.

We have examined altogether five birds in the flesh, and the sex of these has in each case been easily determined. The males may be distinguished by their larger size, longer bill and crest. It is quite a mistake to suppose that the female has no crest and has the top of the head and neck greyer in colour than in the male (*cf.* Buller, *op. cit.* p. 379).

The comparative measurements of six specimens are as follows:—

	Culmen. in.	Crest. in.	Wing. in.
Adult male	2·8–2·9	2·2	7·3–7·6
Adult female	2·5	1·8	7·0

58. Phalacrocorax carbo (Linn.).

Phalacrocorax carbo Grant, Cat. B. Brit. Mus. xxvi. p. 340 (1898).

The Common Cormorant was not procured, but, referring to the species, Mr. Richard Henry says:—"The big Black Cormorant used to have a breeding-place on the west bank of the Waiau River, halfway between Manipouri and Te Anau Lakes. The nests, like those on Anchor Island, were built of sticks and placed in forks of trees leaning over the water, but in this instance they were much higher and situated over a rapid in the most inaccessible part of that mad river. Unlike *P. stewarti*, this species has a regular breeding-season; and in this rookery, the only one of the kind I have seen, about 15 out of 30 nests were occupied in

November 1883. Some of the old birds shot and examined contained half-digested eels, but no trout."

59. Phalacrocorax punctatus (Sparrm.).

Phalacrocorax punctatus Grant, Cat. B. Brit. Mus. xxvi. p. 354 (1898).

a–c. ♂ ♀ immature. Taumaki I., off Hokitika, west coast of South Island, N.Z., 25th February, 1902.

d–i. ♂ adult et immature. Taumaki I., 2nd April, 1901.

k. Immature. Snares Is., 7th January, 1902.

l, m. Adult. Macquarie Is., 14th January, 1902.

The Spotted Shag has the iris green, the skin round the eye blue, bright blue-green on the lores and sides of the face, the gular pouch dark blue, the bill brownish-yellow tinged with pinkish on the lower mandible, the tarsi and feet orange-yellow (*F. W. Hutton*).

60. Phalacrocorax featherstoni Buller.

Phalacrocorax featherstoni Grant, Cat. B. Brit. Mus. xxvi. p. 356 (1898).

The Chatham-Island Shag was not procured.

61. Phalacrocorax chalconotus (G. R. Gray).

Phalacrocorax chalconotus Grant, Cat. B. Brit. Mus. xxvi. p. 369 (1898).

a, b. ♀ adult. Stewart I., New Zealand, 17th January, 1901.

Gray's Shag has the iris brown, the ring of naked skin round eye blue, the lores and sides of face covered with short sooty-black plumes, the bill pale brown, the tarsi and feet flesh-colour (orange-yellow in dry skins) (*F. W. Hutton*).

Mr. Richard Henry, writing from Pigeon Island, Dusky Bay, states that "this species is scarce, and thinly distributed along the coast-line, where perhaps one may be met with in about every twenty miles. A large rookery of this species is situated on the east side of Te Anau, within a mile of the head of the Lake. There used to be two or three hundred birds there in a season, but many have recently been shot and they may be scarce there now. They live on 'Bullheads,' and I do not ever remember finding anything else in them.'

62. PHALACROCORAX SULCIROSTRIS (Brandt).

Graculus sulcirostris Finsch, J. f. O. 1874, pp. 174, 214 [New Zealand?].

Phalacrocorax sulcirostris Grant, Cat. B. Brit. Mus. xxvi. p. 376 (1898).

This species is doubtfully recorded by Dr. Finsch from North Island, but it was not procured by Lord Ranfurly, and can only be a straggler to the New Zealand coasts.

63. PHALACROCORAX TRAVERSI Rothsch.

Phalacrocorax traversi Rothschild, Bull. B. O. C. viii. no. lviii. p. xxi (1898).

a–d. Adult, immature, et pullus. Macquarie Is. 14th January, 1902.

e. Immature. Port Ross, Auckland Is., 4th July, 1901 (*Commander J. P. Rolleston*).

f. Adult. Carnley Harbour, Auckland Is., 9th July, 1901 (*J. P. R.*).

"An adult specimen of the Macquarie-Island Shag in breeding-plumage has the iris dark brown, the naked skin round the eye purple, the nasal caruncles orange, the gular pouch orange-yellow spotted with black, the bill greyish-black, paler towards the tip, the tarsi and toes greyish-brown, and the webs dark brown" (*Ranfurly*).

Commander J. P. Rolleston records the soft parts of the adult bird killed at Carnley Harbour as follows:—"Iris brown; upper mandible black, lower red; tarsi and feet light red."

An immature bird has "the iris brown, the skin round the eye and the bill grey, and the legs and feet grey, tinged with yellow" (*Ranfurly*).

This species, which is new to the British Museum Collection, is very closely allied to *P. verrucosus* from Kerguelen Land, but may be distinguished by its larger size and by possessing a well-marked alar bar. It is very interesting to find this species in New Zealand waters, representing as it does the South-American type, with the feathers on the chin not extending beyond a vertical line drawn from the anterior margin of the eye.

64. PHALACROCORAX CARUNCULATUS (Gmel.).

Phalacrocorax carunculatus Grant, Cat. B. Brit. Mus. xxvi. p. 384, fig. 3 (1898).

a, b. Adult. White Rocks, Cook's Straits, New Zealand, 14th July, 1902.

c. ♀ adult. Brothers I., 29th April, 1901.

The adult female has the iris sea-green, the ring of skin round the eye brilliant peacock-blue, the wattles bright orange, the bill brown, and the feet yellowish-green.

The Cook-Straits Cormorant, the largest of the white-breasted forms, is new to the British Museum Collection, and is certainly one of the most valuable of the birds presented by Lord Ranfurly.

The female from the Brothers I., the only specimen in which the sex has been ascertained, shews no trace of white on the outer scapulars, and only one feather on the lower back is white.

My description of this species in the 'Catalogue of Birds,' taken from examples in Mr. Rothschild's Museum killed on 4th February, must be slightly modified. These latter shewed no trace of a crest, but in the female procured on the 29th April, mentioned above, there is a well-developed crest on the middle of the crown about 1·7 inch in length.

Two eggs of this species taken on the White Rocks on the 14th July, 1902, are of the ordinary Cormorant-type, and measure respectively 2·7 by 1·68 and 2·53 by 1·7 inches.

Regarding the difficulties in procuring specimens of this extremely local species, Lord Ranfurly writes on the 20th of December, 1901:—"I shall try and get you some more specimens of the Cook-Straits Cormorant. I have been to the *only* rock on which they are found four times, but the sea has always been too rough." On the 26th July, 1902, he writes again:—"This Shag is only to be found on one rock called White Rock, about 1½ miles from the mainland. The eggs were taken on 14th July, 1902, and there were besides *fresh* eggs some young birds probably a fortnight old. These birds are rapidly disappearing, and the colony probably does not number more than 40 adults."

65. PHALACROCORAX ONSLOWI Forbes.

Phalacrocorax onslowi Grant, Cat. B. Brit. Mus. xxvi. p. 385 (1898).

Lord Onslow's Shag is not represented in the present collection.

66. PHALACROCORAX STEWARTI Grant.

Phalacrocorax stewarti Grant, Cat. B. Brit. Mus. xxvi. p. 385, pl. V. A (1898).

a. ♀ adult. Stewart Island, New Zealand, 17th January, 1901.

b. Adult. New Zealand. Presented by Donald Mackintosh, Esq.

In the Stewart-Island Shag the "iris is greyish-brown, the ring of naked skin round eye blue, the gular pouch and bill pale brown, and the tarsi and feet flesh-colour" (*F. W. H.*).

Writing from Pigeon Island, Dusky Bay, Mr. Richard Henry says:—"This species is very sedentary in its habits, seldom wandering far from the place where it was bred; it is much tamer than *P. chalconotus* and less active in its habits, allowing a canoe to pass within a few yards. Its principal breeding-place is on a freshwater lagoon on Anchor Island. It appears to have no fixed breeding-season, as eggs and young are to be found at all seasons of the year. Twice I have been near enough to watch the proceedings of this species under water, and on both occasions when the birds started their dive they used both their feet at once, which looked very awkward, for it made them go along in jerks. They hunt very slowly among stones and weeds until they start a fish, and then use their wings and shoot swiftly through the water, probably using their wings and feet alternately, but the wings are only slightly opened, and they travel so fast that I could not be sure. Their spurt only lasted for a little while, then they came to the surface, having often caught the fish. One of the Shags I was watching from a little cliff caught five parrot-fish in about half an hour; they were probably each two or three ounces in weight and evidently sufficient for the time."

67. Phalacrocorax ranfurlyi Grant.

Phalacrocorax ranfurlyi Grant, Bull. B. O. C. xi. no. lxxx. p. 66 (1901).

Adult male. Most nearly allied to *P. stewarti*, but at once distinguished by the absence of the wide white band across the rump (only suggested in the type specimen by one white feather on each side), and by the very different colour of the naked skin on the face. "Iris pale brown, naked skin round the eye and gular pouch bright orange, legs and feet flesh-colour" (*F. W. Hutton*).

Adult males and females collected by Commander J. P. Rolleston, of H.M.S. 'Archer,' have the soft parts carefully recorded as follows:—"Iris brown, ring round eye purple; lores scarlet with black spots (? the minute black plumes); gular pouch scarlet, merging into orange near the bill; legs and feet light flesh-colour."

Total length about 27 inches; culmen from feathers on forehead to tip 2·4; wing 11·2; tail 5·3; tarsus 2·6; outermost toe and claw 4·4.

A young bird (15th January, 1903) in first plumage has the fore-neck sooty-brown, with a white patch on the throat, and in this stage of plumage somewhat resembles the immature of *P. campbelli.*

A rather more advanced bird (15th January, 1901) has the fore-neck white, mottled with brown.

Eyes brown, lores and skin round eye reddish-brown, gular pouch crimson, legs and feet flesh-colour (*J. P. Rolleston*).

The young in first plumage has the iris pale brown, skin round eye and lores brown, gular pouch grey, and the bill and feet brownish-flesh-colour (*F. W. H. & J. P. R.*).

An older bird (16th July, 1901) has the fore-neck white, with a few dark feathers towards the base, and the white wing-stripes of the adult are well defined.

a, b. ♂ adult, ♂ immature. Bounty Islands, 15th January, 1901. (*Type of the species.*)

c–g. ♂ ♀ adult et ♂ juv. Bounty Islands, 15th January, 1903 (*Commander J. P. Rolleston*).

h, i. ♀ immature. Bounty Islands, 16th July, 1901 (*J. P. R.*).

k. Adult. Bounty Islands. Presented by Lieut. Kennett Dixon, R.N.

"The Bounty-Island Shag is by no means abundant.

"We saw no birds with a white patch on the back, though the adult specimen shot (the type of *P. ranfurlyi*) has indications of one.

"It is remarkable that there are no Shags on either the Snares or Antipodes Islands." (*F. W. Hutton.*)

In January 1902 a second attempt was made to secure additional examples of this Cormorant, but it was found impossible to land on Bounty Island, as the sea was breaking right over it, and no boat could land with safety. Subsequently, however, in January 1903, Commander J. R. Rolleston, H.M.S. 'Archer,' visited the islands and procured further specimens, some of which reached New Zealand alive, but were subsequently killed and forwarded to England with other birds in formaline.

68. PHALACROCORAX COLENSOI Buller.

Phalacrocorax colensoi Grant, Cat. B. Brit. Mus. xxvi. p. 386 (1898).

a. Adult. Enderby I., Auckland Is., 3rd January, 1901.

b–d. Adult et immature. Enderby I., Auckland Is., 8th January, 1902.

"The Auckland-Island Shag has the iris dark brown, the ring round the eye purple; the bill brownish-black, orange-yellow at the gape; the gular pouch crimson; the tarsi and toes flesh-colour, and the webs dusky brown.

"We found it very abundant in the Auckland Islands." (*F. W. Hutton.*)

Specimens *b–d* are not quite typical and appear to be more or less intermediate between *P. colensoi* and *P. campbelli*. The white fore-neck, especially in specimen "*b*," is largely interrupted with black, the lower fore-neck being in fact black, with an interrupted white line down the middle; in specimens "*c*" and "*d*" the white line, though somewhat narrow and irregular, is continuous.

In the British Museum Collection there is a fully adult male specimen which probably came from Auckland Islands, presented by Mr. L. W. Milles. This bird resembles specimen "*c*" as regards the white on the throat, but the wings are greener and entirely devoid of an alar bar.

Typical examples of *P. campbelli* having been obtained at the Auckland Islands, it seems possible that the above-mentioned specimens may be the result of interbreeding, but the characters which serve to distinguish the various insular forms are not always quite constant and are perhaps not yet thoroughly established.

69. PHALACROCORAX CAMPBELLI Filhol.

Phalacrocorax campbelli Filhol, Mém. Ac. France, Pass. Vénus, Miss. de l'Ile Campbell, iii. pt. ii. p. 55 (1885); Grant, Cat. B. Brit. Mus. xxvi. p. 387 (1898).

a–c. ♂ adult et immature. Campbell I., 10th January, 1901.

d, e. ♀ adult et immature. Enderby I., Auckland Is., 3rd January, 1901.

f. ♀ adult. Carnley Harbour, Auckland Is., 7th January, 1901.

The adult Campbell-Island Shag has the iris dark hazel *, the ring round the eye purple, the naked skin of the face black with orange spots, the gular pouch reddish-orange, the bill brown, the legs and feet pinkish-flesh-colour, and the soles black.

In the young, the iris is brown, the skin round the eye black, the bill and pouch flesh-colour, and the legs brownish-flesh.

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* Filhol says the eyes are green and the pouch and feet of a fine red colour.

"This is the only species of Shag met with on Campbell Island, where it is common. We also obtained a fine specimen of this species in adult plumage in Carnley Harbour, Auckland Is." (*F. W. Hutton.*)

70. PHALACROCORAX VARIUS (Gmel.).

Phalacrocorax varius Grant, Cat. B. Brit. Mus. xxvi. p. 394 (1898).

The Pied Shag was not included among the species sent home.

71. PHALACROCORAX BREVIROSTRIS Gould.

Phalacrocorax brevirostris Grant, Cat. B. Brit. Mus. xxvi. p. 400 (1898).

The White-throated Shag was not procured by Lord Ranfurly, but among the notes forwarded by Mr. Richard Henry we find the following reference to this species:— "Along the coasts of Dusky Sound one or two pairs of this species may be met with, and a small rookery of about a dozen pairs used to exist on the east side of Te Anau about a mile from the head of the Lake."

72. PHALACROCORAX MELANOLEUCUS (Vieill.).

Phalacrocorax melanoleucus Grant, Cat. B. Brit. Mus. xxvi. p. 398 (1898).

The Frilled Shag was not procured by Lord Ranfurly.

The following is a Key to all the species of *Phalacrocorax* found in New Zealand waters:—

I. Culmen exceeding 1·5 inch from feathers on forehead to tip.
A. Tail composed of 14 feathers .... *carbo.*
B. Tail composed of 12 feathers.
a. General colour of the under parts smoky-grey.
a′. White eyebrow-stripes continued down each side of the neck to the shoulder .... *punctatus.*
b′. No white eyebrow-stripes .... *featherstoni.*
b. General colour of the under parts black.
c′. Upper parts bronze-green, each feather with a shining brass-green margin; legs and feet orange .... *chalconotus.*
d′. Upper parts ash, each feather with a black margin; legs and feet black .... *sulcirostris.*

e. General colour of the under parts pure white.

e'. Feathering on the chin not extending beyond a vertical line drawn from the anterior margin of the eye. Purple-black of the sides of the head extends below the commissure of the bill; nasal caruncles largely developed; a white alar bar...... *traversi.*

f'. Feathering on the chin extending beyond a vertical line drawn from the anterior margin of the eye.

a^2. Legs and feet red, orange or yellowish in dry skins.

a^3. Fore part of neck white like the throat and rest of the under parts.

a^4. With nasal caruncles.

a^5. Size larger: culmen 2·55 inches, depth at forehead 0·5, wing 12·0 or more...................... *carunculatus.*

b^5. Size smaller: culmen 2·15, depth at forehead 0·35, wing 10·5 ...... *onslowi.*

b^4. With no nasal caruncles.

c^5. Size larger: culmen 2·0–2·4, wing 11·6. White on fore-neck as wide as the white on the throat.

a^6. A white dorsal patch; naked skin round the eye light blue, on lores and sides of face very dark blue; a row of small red warts between the culmen and the eye *stewarti.*

b^6. No white dorsal patch; naked skin round the eye purple, lores scarlet with black spots (? minute black plumes) ...... *ranfurlyi.*

d^5. Size smaller: culmen 2·05, wing 10·6–10·9. White on the fore-neck much narrower than on the throat .... *colensoi.*

b^3. Fore part of the neck black, throat and rest of under parts white .... *campbelli.*

b^2. Legs and feet black .... *varius.*

II. Culmen less than 1·5 inch from feathers on forehead to tip.

C. Chin, throat, and under parts white .... *melanoleucus.*

D. Chin, throat, and sometimes fore neck white, rest of under parts black .... *brevirostris.*

73. PHAËTHON RUBRICAUDA Bodd.

Phaëthon rubricauda Grant, Cat. B. Brit. Mus. xxvi. p. 451 (1898).

a, b. Adult. Kermadec Islands.

The Red-tailed Tropic Bird.

74. HARPA NOVÆ ZEALANDIÆ (Gmel.).

Harpa novæ zealandiæ Buller, B. New Zeal. i. pts. iv.–vi. p. 213, pl. x. (1888).

Nesierax novæ zealandiæ Lorenz-Liburnau, Ann. Hofmus. Wien, xvii. p. 321 (1902).

a. ♀ adult. Adam I., Auckland Is., 7th January, 1901.

b. ♀ adult. Dusky Sound, South I., New Zealand, January 1901.

c. ♀ immature. Dusky Sound, South I., New Zealand, June 1901.

d. ♂ adult. Dusky Sound, South I., New Zealand, July 1901.

e. ♀ adult (in spirits). Port Ross, Auckland Is., 4th July, 1901 (*Commander J. P. Rolleston*).

In the Quail-Hawk the iris is hazel; the cere, the skin round the eye, and the legs and feet yellow. A female (in spirits) is said to have had the bill and skin round the eye grey, and the legs and feet grey tinged with yellow.

Several of the smaller species known as *H. australis* Homb. & Jacq. were also seen, and there is a specimen in the Christchurch Museum from the Auckland Islands. I believe *H. australis* to be the male and *H. novæ zealandiæ* the female of one and the same species (*F. W. Hutton*).

I think there can be no doubt that two closely-allied forms of *Harpa* are found in New Zealand, which appear to differ from one another only in size, the larger being *H. novæ zealandiæ* (Gmel.) and the smaller *H. australis* (Hombr. & Jacq.).

In both forms the adults in both sexes have the upper parts blackish spotted and barred with rufous, and the chest and breast buff longitudinally striped with blackish. Likewise, in both, the young have the upper parts uniform sooty-brown irregularly edged and spotted with buff.

The change from the young to the adult plumage is well shown in an immature male collected by Captain L. Strange at the River Hutt.

The following measurements of the wing are taken from the series of thirty-one specimens now in the British Museum :—

H. australis	Males	9·0–9·2 inches.
„	Females	9·7–10·1 „
H. novæ zealandiæ...	Males	9·8–10·3 „
„	Females	10·8–11·4 „

From this table it will be clearly seen that two forms exist, but the female of *H. australis* and the male of *H. novæ zealandiæ* cannot be recognised with certainty unless the sex has been ascertained.

Mr. Richard Henry writes :—“There are a good many ‘Sparrow-Hawks,’ as the colonists call them, about these islands and in the bush, though we seldom see them. They are wary, and fly late in the evening and at dawn, when I often hear the little birds utter their alarm-cries, and know by the way the signal is passed along that one of these swift Hawks is on the hunt in hopes of taking some bird by surprise. I find traces of their work almost as often as I see the birds themselves.

“One rarely sees one of these Hawks hunting a bird in the open, probably because they rarely get an opportunity of doing so. Their most successful plan of hunting is to fly swiftly through the trees, when they have a great advantage over any bird that fails to see or hear them in time to get a start. I am confident that they catch most of the Pigeons in this way, for they cannot catch a good Pigeon out in the open; though, of course, a time must come in the life of every Pigeon when the young and hardy Hawk can catch it. I have often seen them start a Pigeon with a great rush and clatter, but if the latter succeeds in getting out above the trees they nearly always gave it up.

“On two occasions I saw them catch Fantails (*Rhipidura*) by a slight divergence in their swift flight, though the Fantail is so nimble that it is the last bird in the bush I would have expected a Hawk to catch.

"Another surprise was the fact that they are able to overtake Parroquets out in the open; they eagerly hunt these birds when away from the trees, and generally catch them, notwithstanding their marvellous speed and activity. Kaka Parrots are poor fliers, but demons to fight, and the Hawks never seem to trouble the old birds, but they sometimes prey on the younger birds.

"In February I saw a pair of young Hawks just learning to fly. They followed my boat among the rocky islets, and every time they lit on a rock lost their balance from want of practice. They were dark brown on the breast and almost slate-coloured on the back. Their gapes were yellow, and their legs of a greenish-yellow colour. I did not observe their parents.

"At Te Anau a pair fed their young ones for some time near my camp, where they were very welcome, because they preyed mostly on young Sparrows, and afforded me an opportunity of studying some of their habits. The male was only about half the size of the female, and he seemed to devote his whole attention to the Sparrows, who occupied many nests in a few solitary trees on the south-east end of the lake, where there is no forest; but the female seems more inclined to hunt Swamp-hens or Wekas. The parents were like 'Quail-Hawks' and the young ones like 'Bush-Hawks,' so that there may be only one species, which varies a little according to age and the locality the birds live in. I saw the pair hunting in company, and while one was swooping down on the bird the other was mounting; as they swooped alternately, a Parroquet had no chance of escape, and a Starling but little. A Sparrow is too cunning to afford a hunt, for he will not fly in the open, but dives into any sort of cover, even in among ferns; but the Hawk used to fly through the trees where the nests were, and seldom failed to carry off something in his claws.

"When the parents wished to give a little bird to the young ones, they would give vent to a few notes of their laughing scream to attract attention and then drop the bird in mid-air, when the two young ones would race for it and easily catch it before it fell, and, as usual among birds, the most alert and vigorous got the best of everything."

75. CYANORHAMPHUS UNICOLOR (Vigors).

Platycercus unicolor Buller, B. New Zeal. i. pts. iv.–vi. p. 148 (1888).

Cyanorhamphus unicolor Salvad. Cat. B. Brit. Mus. xx. p. 581 (1891); Lorenz-Liburnau, Ann. Hofmus. Wien, xvii. p. 316 (1902).

a–c. ♀ adult. Antipodes I., 14th January, 1901.

d. ♂ adult. Antipodes I., 15th July, 1901 (*Commander J. P. Rolleston*).

The Antipodes Parroquet has the iris red. It is a common bird on the island (*F. W. Hutton*).

76. CYANORHAMPHUS ERYTHROTIS (Wagl.).

Cyanorhamphus erythrotis Salvad. Cat. B. Brit. Mus. xx. p. 586 (1891).

Cyanorhamphus hochstetteri (Reisch.); Salvad. Cat. B. Brit. Mus. xx. p. 577 (1891); Lorenz-Liburnau, Ann. Hofmus. Wien, xvii. p. 315 (1902).

a, b. ♂ adult. Antipodes I., 14th January, 1901.

c. Adult. Antipodes I., 15th July, 1901.

d. Adult. Antipodes I. Presented by Lieut. Kennett Dixon, R.N.

e. ♂ adult. Antipodes I., 29th October, 1899. Presented by Commander R. F. Ayscough, R.N.

f. Adult. Antipodes I. Presented by W. F. Brockholes, Esq.

The Red-eared Parroquet has the iris red, the bill blue, black at the tip, and the legs and feet black.

This is a common species on Antipodes Island, where a yellow variety with the wings and tail-feathers nearly white was captured and kept alive in a cage. It had very little blue on the wings, but all the red parts of the plumage were normal (*F. W. Hutton*).

Commander Ayscough informs us that the male mentioned above weighed 4 oz., and measured in the flesh $12\frac{1}{4}$ inches in length. When shot it was feeding among tussock-grass, of which the crop contained portions.

77. CYANORHAMPHUS NOVÆ ZEALANDIÆ (Sparrm.).

Platycercus novæ zealandiæ Buller, B. New Zeal. i. pts. iv.–vi. p. 137, pl. iv. (1888).

Cyanorhamphus novæ zealandiæ Lorenz-Liburnau, Ann. Hofmus. Wien, xvii. p. 313 (1902).

a. ♂ adult. Dusky Sound, South I., New Zealand, July 1901.

The Red-fronted Parroquet has the iris red, the bill black, bluish towards the base of the upper mandible, and the legs black (*F. W. Hutton*).

78. CYANORHAMPHUS AUCKLANDICUS Bonap.

Cyanorhamphus aucklandicus Salvad. Cat. B. Brit. Mus. xx. p. 584 (1891).

a, b. ♂ ♀ adult. Adam I., Auckland Islands, 8th January, 1901.

The Auckland-Island Parroquet has the iris black, the base of upper mandible blue, and the remainder of the bill and legs black (*F. W. Hutton*).

This form is scarcely distinguishable from typical *C. novæ zealandiæ,* but its dimensions are less, the wing measuring 4·6–4·7 inches instead of 5·0–5·3. Moreover, in the majority of specimens, the bill is much smaller, but this does not always hold good in the case of females of *C. novæ zealandiæ.*

79. CYANORHAMPHUS AURICEPS (Kuhl).

Platycercus auriceps Buller, B. New Zeal. i. pts. iv.–vi. p. 142, pl. xvi. (1888).

Cyanorhamphus auriceps Salvad. Cat. B. Brit. Mus. xx. p. 587 (1891); Lorenz-Liburnau, Ann. Hofmus. Wien, xvii. p. 314 (1902).

a. ♀ adult. Milford Sound, South Island, New Zealand, 23rd April, 1901.

The Yellow-fronted Parroquet has the iris red, the bill blackish-grey, and the feet yellowish-brown (*F. W. Hutton*).

80. NESTOR NOTABILIS Gould.

Nestor notabilis Buller, B. New Zeal. i. pts. iv.–vi. p. 166, pl. vi. (1888); Salvad. Cat. B. Brit. Mus. xx. p. 4 (1891); Lorenz-Liburnau, Ann. Hofmus. Wien, xvii. p. 319 (1902).

a. ♂ adult. New Zealand.

The Kea Parrot.

81. NESTOR MERIDIONALIS (Gmel.).

Nestor meridionalis Buller, B. New Zeal. i. pts. iv.–vi. p. 150, pl. v. (1888); Salvad. Cat. B. Brit. Mus. xx. p. 5 (1891); Lorenz-Liburnau, Ann. Hofmus. Wien, xvii. p. 316 (1902).

a. ♂ adult. Milford Sound, South Island, N.Z., 23rd April, 1901.

The Kaka Parrot has the iris dark brown, the bill dark grey and bluish-black, the feet and legs bluish-grey, and the soles yellow (*F. W. Hutton*).

Mr. Richard Henry, of Resolution Island, has supplied Lord Ranfurly with the following notes on this species:—

"I have often found nests of the Kaka Parrot in hollow trees, not far from the ground. There are generally four pure white eggs, but I think the parents seldom rear more than two young ones. Sometimes they have young ones in November and sometimes in April. I do not know which is their favourite breeding-season.

"Their staple food consists of grubs (which they cut out of partly-decayed timber), varied with berries, and with honey which they lick out of the Rata-blossoms in summer, and kernels of Miro-stones in autumn.

"They cut grubs out of a withering *Panax* in such a way that it shows they must have reasoning powers and a distinct knowledge of the relationship between cause and effect. I have often tried to find the grub that was killing the branch, but I usually have to do twice as much cutting as a Kaka would do without finding it.

"Last April I took two young ones as pets, and when the parents saw me leaving the nest they went to it at once, and, understanding that I had taken their young, followed me down to the boat screaming their loudest for assistance. This attracted all the Kakas within hearing, and they made a great demonstration of sympathy. They often do the same in response to the call of a wounded one, and the shooter may then kill a large number without difficulty.

"They make splendid pets, but are very difficult to feed when young—when a fruit-stone the size of a pea will kill them. They have a greater variety of notes and calls than any other bird met with in this locality.

"When an old Kaka is eating a ripe Miro-berry he rejects the skin and only licks out the little bit of fruit between it and the stone. I think that they also break the stones for sake of the little oily kernels, but I am not quite sure of this[*]. All the stones are broken, and the Kakas have a substance like the kernels in their crops. The stones are terribly hard to break, but the rats can break them. Kakas also cast up the skins of the big wood-grubs, which look like dry bits of tissue-paper.

"After my pets were able to fly one of them was killed by a Hawk. I heard the scream of distress and went to see what was the matter. Several old Kakas also came to the rescue, and one of them followed the Hawk about through the trees, while others tried to intercept him, but they were not nearly smart enough.

"Many New Zealand trees and shrubs are very erratic seed-producers. In some seasons all berries are scarce, while in others some are plentiful and some are absent; yet the Kakas and Kakapos seem to know beforehand when there will be plenty to feed their young ones and to hatch them at the right time.

"It often happens that the female has a much lighter-coloured head than the male, but no two of them are exactly the same."

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[*] "I have just found out that the Kakas do break the Miro-stones—when they are green, at all events. They are broken fairly in two, crosswise."

82. STRINGOPS HABROPTILUS G. R. Gray.

Stringops habroptilus Buller, B. New Zeal. i. pts. iv.–vi. p. 176, pl. vii. (1888); Salvad. Cat. B. Brit. Mus. xx. p. 599 (1891); Lorenz-Liburnau, Ann. Hofmus. Wien, xvii. p. 320 (1902).

a–c. ♂ ♀ adult. Dusky Sound, South Island, New Zealand.

d, e. Adult (in spirits). Dusky Sound, South Island, New Zealand.

Mr. Richard Henry has supplied Lord Ranfurly with the following notes:—

"The male Kakapo can swell up his 'air-sac,' of which the female has no trace, till it is nearly as big as his body, and must be a formidable-looking fellow on parade; I never saw one booming, for they never do so in captivity.

"I went a special trip to Wet Jacket Arm to try and get better acquainted with them, and on the 21st January, 1898, climbed a high ridge south-west of Oke Island. It was very steep and rough, and all along its narrow top for half a mile were a number of 'dusting-holes,' as I used to call them, but there was not a particle of dust in them, for there had been about an inch of rain every day for a month. 'Dusting-holes' is perhaps a bad name; 'bowers' would, I think, be more suitable. They were about 18 inches in diameter, fairly level on the bottom, and 3 inches deep, with steep sides. In some the peaty earth was firmly pressed down as if by the naked hand, while in others it was freshly raked up and loose. All were connected with one another by fresh, well-beaten pathways, and at this season a good many birds must go up there of an evening, but in the off-season the place is deserted. This suggests that the bowers are used for dancing or parades in the courting-season. The Australian Lyre-birds make very similar holes.

"Someone suggested that the booming may be a defiance or a challenge between the males, as is the case of cocks crowing; but I think that among the thinly-scattered population of Kakapos in this dense forest, with such poor means of travelling, it was necessary for either the male or female to have a loud call. The voice of the female Kakapo is a hoarse cough, and can be only heard for a couple of hundred yards, while the booming of the males can be heard for a couple of miles. Therefore I think it likely that the males take up their places in the 'bowers,' distend their air-sacs, and give vent to their love-songs, and that the females, attracted by the sound, come up to see the show.

"Though one may hear plenty of them in the evenings, it is never possible to tell where they are within a mile, as they do not keep on calling long enough for one to hunt them up. They start with a couple of short grunts, and then utter five or six deep measured notes like the sound of a muffled drum, the loudest in the middle. The male repeats this series about three times in the daylight and is then silent, and other Kakapos, perhaps miles away, take up the sound. On this ridge we got quite close to a calling bird, and can testify as to the power of the note. I could feel the vibration of it, and likewise my boy, who was holding the dog thirty yards away. I thought the drummer was just at my feet, and we stood still for a long time in hopes that he would commence again, but he was silent, and the dog ultimately found him 40 yards away hiding under a log. We had come up with all caution, stopping when he stopped and walking while he was drumming, yet he seemed to have taken alarm. This will show how hard it must be to get right up to a bird, if he takes alarm at that distance. This happened about 4 P.M., but, as a rule, very few birds are drumming so early. In our fortnight's ramble we saw very few ridges that had Kakapos' 'bowers' on them. On many there were none, and on others only one or two, and we never found them below an elevation of 500 or 600 feet above the sea. The birds have peculiar valves in the nostrils, which are larger in the males, and may be a part of the apparatus for drumming. The word 'Kakapo' is compounded of two Maori words: 'Kaka,' a parrot, and 'po,' night, which is very appropriate, because I think they are the only Parrots that feed at night. They have small eyes for night-birds, and often climb trees in the daytime to sit in the sun after a spell of wet weather, which shows that it is not the light they fear; but probably, like many other creatures, they have chosen the night the better to avoid their enemies.

"The only enemies they have are the sand-flies, which do not come out at night, but collect very quickly about any game they find near the ground in the daylight. The Kakapos' slow movements would allow them to be punished very severely if they walked about on the ground in the daytime, for, as I know to my cost, the flies are expert at getting in under cuffs and collars, and may do the same with the Kakapo's loose feathers. Therefore, when the sand-flies have gone to bed the Kakapos come out and gather food in peace and retire in the morning to their dark places, where the former will not enter.

"When in a Penguin's cave one can always see a cloud of sand-flies near the door, but they will not enter into the gloom. A good many of the wiser Penguins seem to know how far the flies will come in; but some of them place their nests too near the door, where their young ones are severely punished if not killed outright. I had two captive Roas killed by sand-flies.

"I was always puzzled to know how it was the Kakapos got so fat in summer-time; but now I find that they suck the honey out of the Rata-blossoms, like all the other bush-birds, and as this honey is plentiful in the Sounds in December, it must form an important item to mix with their various other foods. On 18th December, with the aid of a little glass syringe, I gathered a teaspoonful of this honey in ten minutes, so it must be easy for the Kakapos to get as much of it as they want. The little branches of the Ratas are very strong and able to bear their weight."

83. MIRO ALBIFRONS (Gmel.).

Miro albifrons Buller, B. New Zeal. i. pt. ii. p. 36, pl. i. (1887); Lorenz-Liburnau, Ann. Hofmus. Wien, xvii. p. 304 (1902).

a, b. ♂ ♀ adult. South Island, New Zealand, January.

c, d. ♀ adult. Dusky Sound, South Island, New Zealand, March.

c. Adult (in spirits). Dusky Sound, South Island, New Zealand, March.

In the female of the South-Island Robin the iris, bill, and legs are black (*F. W. Hutton*).

84. MIRO DANNEFAERDI Rothsch.

Miro dannefaerdi Rothsch. Nov. Zool. i. p. 688 (1894) [Snares Is.]; Lorenz-Liburnau, Ann. Hofmus. Wien, xvii. p. 305 (1902).

a–e. ♂ ♀ adult. Snares, 2nd January, 1901.

The Snares-Island Robin has the iris, bill, and tarsi black, the toes brown, and the soles orange. It is not uncommon on the Snares (*F. W. Hutton*).

85. PETRŒCA MACROCEPHALA (Gmel.).

Myiomoira macrocephala Buller, B. New Zeal. i. pt. ii. p. 42, pl. v. (1887); Lorenz-Liburnau, Ann. Hofmus. Wien, xvii. p. 305 (1902).

a. ♂ adult. Enderby I., Auckland Is., 3rd January, 1901.

b–e. ♂ adult et immature. Enderby, 8th January, 1902.

f. ♂ adult. Enderby, 14th January, 1901.

g. ♂ adult. Dusky Sound, South Island, New Zealand, June 1901.

h. ♀ adult. Dusky Sound, South Island, New Zealand, 19th July, 1901.

Iris brown, the ring round the eye grey, the bill grey, and the legs and feet blackish-grey tinged with yellow (on the soles).

The South-Island Tit is not common in the Auckland Islands (*F. W. Hutton*).

Mr. Richard Henry has supplied Lord Ranfurly with the following notes on its habits:—"This Tit builds its nest under a bank or under a leaning tree, or in some position where the rats cannot get at it. It is evidently due to this precaution that the bird is so plentiful in this rat-infested forest. The female is also an adept in trying to decoy intruders away from her nest. I have seen her tumbling about in the bed of a dry creek as if she was wounded and in great distress, but, knowing that little ruse, I did not run after her, and soon found the nest, with four young ones, close to my shoulder. Her device must, however, be successful in deceiving her worst enemies, or the habit would not have been acquired and retained by such a large number of birds of all sorts and sizes."

I have carefully compared the birds from Enderby Island with examples from New Zealand; but the former, which were sent home in formaline, having made somewhat faded and draggled skins, render comparison difficult, and it is impossible to say whether the birds from the two localities are absolutely identical. I may point out, however, that males from Enderby Island appear to be a trifle larger, the wing measuring 3·1 inches, while in New Zealand birds it is generally less than 3·0 inches in length.

86. PSEUDOGERYGONE IGATA (Quoy & Gaimard).

Curruca igata Quoy et Gaim. Voy. de l'Astrol., Zool. i. p. 201, pl. xi. fig. 2 (1830).

Gerygone flaviventris Buller, B. New Zeal. i. pts. iv.–vi. p. 44 [part.], pl. ii. (1888).

Pseudogerygone igata Grant, Bull. B. O. C. xv. no. cxvi. p. 80 (1905).

a. ♂ adult. Dusky Sound, South Island, New Zealand, March 1901. Ranfurly Coll.

b, c. Adult. Dusky Sound, South Island, June and July. Ranfurly Coll.

The South-Island "Warbler" has the iris, bill, and legs black (*R. Henry*).

The Flycatchers of the genus *Pseudogerygone* from the North and South Islands, though apparently perfectly distinct from one another, have been included under one heading by Sir Walter Buller, and by ornithologists generally. Previous to the arrival of the birds sent home by Lord Ranfurly from South Island, the British Museum did not possess examples of the true *P. igata*, and, as will be seen from the lists given below, all the specimens in the collection appear to have been procured in the North Island. *P. igata* may be distinguished from *P. flaviventris* G. R. Gray by the lighter olive-brown colour of the upper parts, which shades into a warmer tint on the rump and upper tail-coverts, by having the axillaries, sides, flanks, and under tail-coverts strongly washed with yellow, and the subterminal white bar on the outer pairs of tail-feathers somewhat wider. *The iris is black.*

Of three adult examples of this species in the Tring Museum, only one is labelled "Dunedin, *iris dark.*"

In *P. flaviventris* the general colour above is dark olive-brown with a more olive tinge on the lower back and rump, the entire under parts are grey, whitish on the axillaries and middle of the belly, and very faintly tinged with yellowish on the flanks and under tail-coverts. *The iris is red.*

The synonymy of this species is as follows:—

87. PSEUDOGERYGONE FLAVIVENTRIS G. R. Gray.

Gerygone flaviventris G. R. Gray, Voy. Ereb. & Terror, Birds, p. 5, pl. iv. fig. 1 (1844); Sharpe, t. c., Appendix, p. 25 (1875).

Gerygone aucklandica Pelz. Reise Novara, Vög. p. 65 (1865).

Gerygone sylvestris Potts, Tr. N. Zeal. Inst. v. p. 177 (1873).

Pseudogerygone igata Sharpe (nec Q. & G.), Cat. B. Brit. Mus. iv. p. 218 (1879).

Gerygone flaviventris Buller, B. New Zeal. i. p. 44 [part.] (1888).

Pseudogerygone flaviventris Grant, Bull. B. O. C. xv. no. cxvi. p. 81 (1905).

The following specimens are in the British Museum:—

a. Adult [juv. sk., *fide* Sharpe]. Bay of Islands, North Island, New Zealand (*Lieut. A. Smith*). Voyage of the 'Erebus' and 'Terror.' *Type of the species.* [42.12.16.39.]

b, c. Adult. Bay of Islands (*Lieut. A. Smith*). Voyage of the 'Erebus' and 'Terror.' [43.9.16. 11 & 12.]

d, e. ♂ ♀ adult. [North Island] (*F. Strange*). Presented by Capt. Stokes, R.N.

f. Adult. [North Island.] Zoological Society's Collection.

Though unable to trace the history of specimen "*f*," I am probably justified in regarding it as having come from North Island, as it is precisely similar to the specimens "*a–c*"; specimens "*d* & *e*" are likewise almost certainly from the North Island, but I have been unable to obtain any satisfactory proof of this.

Dr. Sharpe [Zoology of the 'Erebus' and 'Terror,' Appendix, p. 25 (1875)] states that in company with Dr. Oustalet he had examined the type of *Gerygone igata*, which still existed in the Jardin des Plantes, and considered that it was distinct from *G. flaviventris*. Subsequently, however, when writing the Catalogue of Birds, he appears to have changed his mind, and come to the conclusion that the names were synonymous.

There can, I think, be no doubt that *G. sylvestris* Potts, from Westland, South Island, is synonymous with the present species. As in *P. flaviventris*, the iris is *red*.

88. RHIPIDURA FLABELLIFERA Gmel.

Rhipidura flabellifera Buller, B. N. Zeal. i. pt. ii. p. 69, pl. iv. (1887); Lorenz-Liburnau, Ann. Hofmus. Wien, xvii. p. 310 (1902).

a, *b*. ♀ adult. Dusky Sound, South Island, New Zealand, March 1901.

The Pied Fantail-Flycatcher has the iris and legs black (*F. W. Hutton*).

The above specimens have the upper parts rather darker than the majority of specimens and the breasts unusually deeply coloured: this is, however, probably due to some impurity in the formaline in which they were sent home.

89. RHIPIDURA FULIGINOSA (Sparrm.).

Rhipidura fuliginosa Buller, B. New Zeal. i. pt. ii. p. 72, pl. iv. (1887); Lorenz-Liburnau, Ann. Hofmus. Wien, xvii. p. 310 (1902).

a, *b*. ♂ adult. Dusky Sound, South Island, New Zealand, March 1901.

The Sooty Fantail-Flycatcher has the iris, upper mandible, and legs black, and the lower mandible white.

90. Clitonyx ochrocephala (Gmel.).

Clitonyx ochrocephala Buller, B. New Zeal. i. pt. ii. p. 56, pl. ii. (1887).

Mohua ochrocephalus Lorenz-Liburnau, Ann. Hofmus. Wien, xvii. p. 306 (1902).

a, b. ♂ ♀ adult. Dusky Sound. South Island, New Zealand, March 1901.

c. ♂ adult. Dusky Sound, South Island, New Zealand, June 1901.

The male of the "Yellow-head" or "Canary," as it is often locally termed, has the iris, bill, and legs black: in the female the iris and bill are black, the legs dark, and the feet lighter (*F. W. Hutton*).

91. Certhiparus novæ zealandiæ (Gmel.).

Certhiparus novæ zealandiæ Buller, B. New Zeal. i. pt. ii. p. 51, pl. ii. (1887); Lorenz-Liburnau, Ann. Hofmus. Wien, xvii. p. 306 (1902).

a–d. ♂ ♀ adult. Dusky Sound, South Island, New Zealand, March 1901.

The New Zealand "Creeper" has the iris black, and the bill and legs brown or grey (*F. W. Hutton*).

92. Anthornis melanura (Sparrm.).

Anthornis melanura, Buller, B. New Zeal. i. pp. 85, 242 (woodcut of nest and eggs) (1888); Lorenz-Liburnau, Ann. Hofmus. Wien, xvii. p. 310 (1902).

a. Immature. Enderby I., Auckland Is., 3rd January, 1901.

b, c. ♀ adult et immature. Port Ross, Auckland Is., 4th January, 1901.

d. Immature. Adam I., Auckland Is., 8th January, 1901.

e, f. ♂ adult. Epijwart, Auckland Is., 8th January, 1901.

g–i. Pullus (in spirits). Adam I., Auckland Is., 8th January, 1901.

The iris is red, the bill black, the legs and feet slate-colour (*Ranfurly*).

The Bell-bird was common in the Auckland Islands. The nest sent was found in a grass-tussock (*F. W. Hutton*).

93. **Prosthemadera novæ zealandiæ** (Gmel.).

Prosthemadera novæ zealandiæ, Buller, B. New Zeal. i. pt. iii. pp. 94, 242, pl. ii. fig. (woodcut of nest and eggs) (1888), ii. p. 338 [Kermadecs]; Lorenz-Liburnau, Ann. Hofmus. Wien, xvii. p. 311 (1902).

a, *b*. Adult et immature. Port Ross, Auckland Is., 4th January, 1901.

The Tui or Parson-bird is common on the Auckland Islands (*F. W. Hutton*).

94. **Zosterops cœrulescens** Lath.

Zosterops cærulescens Buller, B. New Zeal. i. pt. iii. p. 77, pl. i. (1888), ii. p. 338 (1888) [Kermadecs]; Lorenz-Liburnau, Ann. Hofmus. Wien, xvii. p. 310 (1902).

Zosterops lateralis Filhol, Mém. Ac. France, Pass. Vénus, Miss. de l'Ile Campbell, iii. pt. ii. p. 37 (1885).

a, *b*. ♀ adult. Snares, 2nd January, 1901.

c, *d*. Adult. Enderby I., Auckland Is., 3rd January, 1901.

e, *f*. Adult. Auckland Is., 8th January, 1902.

We found the White-eye both on the Snares and Auckland Is., and Filhol has reported its presence on Campbell Island. A nest with three addled eggs was found on the Auckland Islands in the branches of a *Dracophyllum longifolium* (*F. W. Hutton*).

Iris dark brown, the bill black, greyish at the base, and the legs and feet slate-grey (*Ranfurly*).

95. **Bowdleria caudata** (Bull.).

Sphenœacus fulvus Buller (nec G. R. Gray), B. New Zeal. i. p. 61 (1888).

Sphenœacus caudatus Buller, Ibis, 1894, p. 523; id. Tr. New Zeal. Inst. xxvii. p. 128 (1895).

Bowdleria caudata Lorenz-Liburnau, Ann. Hofmus. Wien, xvii. p. 307, pl. xii. fig. 2 (1902).

a–d. ♂ ♀ adult. Snares, 2nd January, 1901.

The Snares Fern-bird has the iris hazel and the bill and legs brown. It is a common species on the islands (*F. W. Hutton*).

This well-marked species is easily distinguished from *B. fulva* (G. R. Gray) by its larger size and much heavier bill, and by having the feathers of the sides and flanks indistinctly streaked along the shafts with blackish, while in *B. fulva* these feathers are very conspicuously streaked with black down the middle.

		Wing. in.	Culmen. in.
B. caudata	Male	2·75	0·69
	Female	2·6	0·62
B. fulva	(Sex not indicated)	2·3–2·45	0·5–0·52

96. Anthus steindachneri Reiser.

Anthus steindachneri Sharpe, Bull. B. O. C. xiii. no. xcvii. p. 59 (1903).

Anthus novæ zealandiæ steindachneri Lorenz-Liburnau, Ann. Hofmus. Wien, xvii. p. 309, pl. xii. fig. 4 (1902).

a. Adult. Port Ross, Auckland Is., 4th January, 1901.

b. Immature. Campbell I.

c–e. ♀ adult et ♂ immature. Antipodes I., 14th January, 1901.

f. ♀ adult. Antipodes I. Presented by Lieut. Kennett Dixon, R.N.

Steindachner's Pipit has the iris black and the legs and feet brown. It was not uncommon on the Auckland and Antipodes Islands, and its powers of flight were very limited (*F. W. Hutton*).

I have examined a series of specimens in the Tring Museum from Antipodes and Auckland Islands, all of which belong to the present form, and differ constantly from *A. novæ zealandiæ* in having the breast buff-coloured.

97. Xenicus longipes (Gmel.). (Plate XII. fig. 1.)

Xenicus longipes Buller, B. New Zeal. i. pt. iii. p. 108, pl. iv. (1888) [part.]; Lorenz-Liburnau, Ann. Hofmus. Wien, xvii. p. 312 (1902); Grant, Bull. B. O. C. xv. no. cix. p. 15 (1904).

a, b. ♂ adult. Dusky Sound, Otago District, S. Island, New Zealand, March 1901.

c. ♂ adult. Nelson, S. Island, New Zealand, 1st May, 1897.

d. ♀ immature. Nelson, January 1901.

Judging from the large series kindly lent me by Mr. Walter Rothschild, and from the specimens in the British Museum, which together number forty-six, the fully adult male and female of this species do not differ from one another in plumage; and the bird with the upper parts umber-brown, which both Sir Walter Buller and Dr. Sclater describe as the adult female, is really immature.

The range of this species is confined to South Island, New Zealand.

In some examples of *X. longipes* the scale covering the front of the tarso-metatarsus is entire, but occasionally it is divided into separate scales.

The wing measures 2·2–2·3 inches.

98. XENICUS STOKESI G. R. Gray. (Plate XII. figs. 2 & 3.)

Xenicus longipes Buller, B. New Zeal. i. p. 108 (1888) [part., North Island].

Xenicus stokesi G. R. Gray, Ibis, 1862, p. 219; Grant, Bull. B. O. C. xv. no. cix. p. 15 (1904).

Xenicus gilviventris Sclater (nec v. Pelz.), Cat. B. Brit. Mus. xiv. p. 453 (1888). [Type of *X. stokesi* Gray.]

The type of this species, an immature bird, was procured for Capt. Stokes, either by Dr. Lyall or by Mr. F. Strange *, in the Rimataka Ranges of Wellington District, North Island. An adult bird, also procured at the same time, was identified as *X. longipes* by G. R. Gray (*cf.* 'Ibis,' 1862, p. 218). There can be no doubt that these two specimens are adult and immature examples of the same species. The adult may be at once distinguished from *X. longipes* by the shining slate-blue sides of the neck and chest tinged, in certain lights, with greenish, and by the patch of pure yellow feathers on the yellowish-green flanks. In the adult of *X. longipes* the sides of the neck and chest are grey, and the flanks uniform yellowish-green, even in the most brightly-coloured specimens. The bird described by Dr. Sclater [Cat. B. Brit. Mus. xiv. p. 453 (1888)] as the adult of *X. gilviventris* v. Pelz. is the immature type specimen of *X. stokesi.*

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* The original labels have unfortunately been removed.

In both examples of *X. stokesi* the scale covering the front of the tarso-metatarsus is entire.

The wing measures 2·1 inches in the adult bird and 2·25 in the immature type specimen.

99. XENICUS GILVIVENTRIS v. Pelz.

Xenicus gilviventris Buller, B. New Zeal. i. pt. iii. p. 111, pl. iv. (1888); Grant, Bull. B. O. C. xv. no. cix. p. 16 (1904).

a–c. Adult et immature. Lake Te Anau, Otago District, South I., New Zealand, March 1903.

d. ♂ adult. Long Sound, Otago District, March 1897.

e. ♀ adult. Long Sound, Otago District, 20th April, 1897.

I have examined 21 examples of this species, the majority of which have been kindly lent me by Mr. Walter Rothschild. The fully adult male and female do not differ from one another in plumage, the upper parts being greenish-olive, shading into greyish-brown on the crown. Immature specimens of both sexes have the upper parts dull yellowish-brown, shading into umber on the crown. A specimen in the Tring Museum (*Buller*), which appears to be in a still younger stage of plumage, has the upper parts tinged with dull greenish.

The wing measures 2·0 inches.

As I have already pointed out, two species of *Acanthidositta* occur in New Zealand and have been united by Sir Walter Buller under the name of *A. chloris*. Thanks, however, to the specimens sent home by Lord Ranfurly it is now clear that *A. chloris* (Sparrm.) and *A. citrina* (Gmel.) are perfectly distinct species, and should be distinguished as follows :—

100. Acanthidositta chloris (Sparrm.).

Sitta chloris Sparrm. Mus. Carls. no. 33, pl. 33 (1787).

Acanthisitta chloris Finsch, Trans. New Zeal. Inst. vii. p. 227 (1875).

Acanthidositta chloris Sclater, Cat. B. Brit. Mus. xiv. p. 451 (1888) [part.]; Grant, Bull. B. O. C. xv. no. cxvi. p. 82 (1905).

a, b. ♂ adult. Avondale Station, Marlborough, South I., New Zealand (*C. G. Teschemaker*). Ranfurly Coll.

c–e. ♂ adult et ♂ pullus (in spirits). Avondale Station, Marlborough, South I., New Zealand (*C. G. Teschemaker*). Ranfurly Coll.*

The *adult male*, contrary to what has been generally believed, has the forehead and fore part of the crown reddish-olive-brown, shading into olive-green on the hinder part of the crown and upper parts. The wing in six specimens measures 1·85–1·9 inch; tarsus 0·75.

In the *adult female* the crown is olive-green like the rest of the upper parts, only the feathers at the base of the bill inclining to olive-brown. The wing measures 1·9 inch; tarsus 0·73.

Young birds have the upper parts olive-green like the adult, only the feathers of the crown and nape being pale brown with marginal streaks of blackish, and the chin, throat, and breast more faintly spotted with brown than in the young of *A. citrina*. I have examined four specimens in this stage of plumage, two being young males preserved in spirits, sent with their male parent from Marlborough.

101. Acanthidositta citrina (Gmel.).

Citrine Warbler Lath. Gen. Syn. ii. pt. ii. p. 464 (1783) [Dusky Bay, N.Z.].

Motacilla citrina Gmel. Syst. Nat. i. p. 979 (1788, ex Lath.).

Acanthisitta citrina Finsch, Trans. New Zeal. Inst. vii. p. 228 (1875).

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* All the specimens in spirits are said to have been collected by Mr. C. G. Teschemaker at Avondale Station; but possibly some mistake has been made.

Acanthidositta chloris Sclater, Cat. B. Brit. Mus. xiv. p. 451 (1888) [part.].

Acanthidositta citrina Grant, Bull. B. O. C. xv. no. cxvi. p. 83 (1905).

a. ♂ adult. Dusky Sound, Otago Dist., South I., New Zealand, March 1901. Ranfurly Coll.

b, c. ♀ adult et ♂ pullus (in spirits). Avondale Station, Marlborough, South I., New Zealand (*C. G. Teschemaker*). Ranfurly Coll.*

This species has been generally confounded with the closely allied form *A. chloris* (Sparrm.), but the *adult male* may be at once recognised by the wide and strongly defined white eyebrow stripe and by having the mantle and back of a bright sap-green colour, the rump and upper tail-coverts yellow, faintly tinged with greenish, but contrasting strongly with the back; and the sides, flanks, and under tail-coverts bright yellow. Iris and bill black, legs brown, feet light yellow. Size larger than in *A. chloris*. Wing 2·05–2·1 inches; tarsus 0·81.

The *adult female* differs chiefly from the female of *A. chloris* by having the feathers of the head and nape light brown with marginal streaks of black (as in the immature bird); the superciliary stripe white and very strongly defined; the back dark olive-brown, indistinctly streaked with blackish in younger birds; and the rump and upper tail-coverts brownish-yellow. Wing 1·9–2·0 inches; tarsus 0·8.

Young birds may be distinguished from the young of *A. chloris* by having less green on the upper parts, only the rump and outer margins of the quills being tinged with olive. The pale brown black-edged feathers, confined to the head and nape in the young of *A. chloris*, *extend over the back* in the present species, and the spotting on the throat and breast is much bolder.

This difference in plumage cannot be dependent on sex; for Mr. W. P. Pycraft has ascertained, from an examination of three young birds in spirits of about the same age, that one specimen with the entire back striped and two with the back olive-green are males.

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* See footnote on p. 595.

In 1875 Dr. Finsch (*op. cit.*) indicated the fact that *A. citrina* (Gmel.) was distinct from *A. chloris* (Sparrm.), and to some extent he pointed out the distinguishing characters of the female of the former, as well as the difference in size. Sir Walter Buller did not believe in these differences [*cf.* B. New Zealand, i. p. 114 (1888)], but apparently Dr. Finsch was right.

102. TURNAGRA CRASSIROSTRIS.

Turnagra crassirostris Buller, B. New Zeal. i. pt. i. p. 31, pl. iv. (1887); Lorenz-Liburnau, Ann. Hofmus. Wien, xvii. p. 304 (1902).

a, b. Adult. South Island, New Zealand, January 1901.

c. Adult. Dusky Sound, South Island, N.Z., June 1901.

The South-Island Thrush has the iris, bill, and legs black (*R. Henry*).

According to Sir W. Buller the iris is yellow.

Mr. Richard Henry, of Resolution Island, forwards the following note on this species:—

"There are no South-Island Thrushes living permanently on Pigeon Island, but some time ago a solitary individual of this species came to my house and became almost too tame, for it would come into the room and hop about the breakfast table, tasting everything and eating a few crumbs of bread and fish. It stayed for some months and then went away for good.

"Its song is not unlike the first few notes of the Song-Thrush, but is uttered more in snatches and has many notes of its own; the voice is loud and fine.

"Both species are also somewhat alike in size and appearance, but very different in habits.

"The New Zealanders are all remarkedly tame and often come into the tent and eat scraps like a Robin, but, unlike the Robin, there may be several Thrushes together, and all good friends.

"They live mostly in the bottoms of warm valleys, where the fruit-bearing scrubs are most plentiful. I have often seen them eating fuchsia-berries, and the Thrush at my house cleared the place of spiders and could shell oats like a Sparrow.

"They are among the first birds to disappear before the settlers, and are never plentiful even in the most suitable and uninhabited places. I never found a nest of this species.

"They have peculiar ears. A purse of tender skin goes down into the ear with no apparent hole in the skin. I have never heard of such an efficient ear-protector in other birds." *

103. GLAUCOPIS CINEREA Gmel.

Glaucopis cinerea Buller, B. New Zeal. i. pt. i. p. 5, pl. i. (1887); Lorenz-Liburnau, Ann. Hofmus. Wien, xvii. p. 302 (1902).

a. ♂ adult. Dusky Sound, South I., New Zealand, June 1901.

b. Adult (in spirits). Dusky Sound, South I., New Zealand, June 1901.

The Orange-wattled Crow has the iris, bill, and feet black (*R. Henry*).

INTRODUCED SPECIES.

1. TURDUS MERULA Linn.

Merula merula Seebohm, Cat. B. Brit. Mus. v. p. 235 (1881).

The Blackbird was seen on the Auckland Islands, and is said to occur on Campbell Island.

2. TURDUS MUSICUS Linn.

Turdus musicus Seebohm, Cat. B. Brit. Mus. v. p. 191 (1881).

a. Adult. Snares, 2nd January, 1901.

"A nest of the Song-Thrush containing three young birds was found on the Snares; it was built in the hollow stump of a tree" (*F. W. Hutton*).

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* In this connection attention may be drawn to Mr. W. P. Pycraft's paper on *Acanthidositta*. In this bird the ear opens into an extraordinary pocket of skin. *Cf. infra*, p. 607.

3. CARDUELIS CARDUELIS (Linn.).

Carduelis carduelis Sharpe, Cat. B. Brit. Mus. xii. p. 185 (1888).

"The Goldfinch was seen on the Snares and on Bollons Island, Antipodes; it has also been reported from Campbell Island" (*F. W. Hutton*).

II.—BIRDS FROM THE COOK ISLANDS.

Examples of the following birds from Raratonga, Cook Islands, were procured for Lord Ranfurly by Lt.-Colonel Gudgeon, C.M.G., and sent home in formaline. They were subsequently made into skins.

1. PTILOPUS RAROTONGENSIS Hartl. & Finsch.

Ptilopus rarotongensis Wiglesw. Ibis, 1891, p. 574; Salvad. Cat. B. Brit. Mus. xxi. p. 103 (1893).

a. ♂ adult. Raratonga, Cook Is., March 1901.

Col. Gudgeon writes: "The native name of the Raratonga Fruit-Pigeon is 'Kukupa'; it has the bill green."

2. GLOBICERA PACIFICA (Gmel.).

Globicera pacifica Salvad. Cat. B. Brit. Mus. xxi. p. 173 (1893).

a. ♀ adult. Raratonga, Cook Is., March 1901.

"The native name of this Fruit-Pigeon is 'Rupe'" (*Col. Gudgeon*).

3. ANOUS STOLIDUS (Linn.).

Anous stolidus Saunders, Cat. B. Brit. Mus. xxv. p. 136 (1896).

a, b. ♂ ♀ adult. Raratonga, Cook Is., 11th March, 1901.

"The native name of the Noddy is 'Ngoio'; it has the bill and legs black" (*Col. Gudgeon*).

4. GYGIS CANDIDA (Gmel.).

Gygis candida Saunders, Cat. B. Brit. Mus. xxv. p. 149 (1896).

a. ♀ adult. Raratonga, Cook Is., 8th March, 1901.

"The native name of the White Tern is 'Kakaia'; it has the iris black and the bill and legs steel-blue" (*Col. Gudgeon*).

5. Heteractitis incanus (Gmel.).

Heteractitis incanus Sharpe, Cat. B. Brit. Mus. xxiv. p. 453 (1896).

a. ♂ adult. Raratonga, Cook Is., 7th March, 1901.

"The native name of the American Tattler is 'Patangaroa'; the iris, bill, and legs are black" (*Col. Gudgeon*).

The specimen sent is in winter plumage.

6. Demiegretta sacra (Gmel.).

Demiegretta sacra Sharpe, Cat. B. Brit. Mus. xxvi. p. 137 (1898).

a. ♂ adult (*dark phase*). Raratonga, Cook I., 11th March, 1901.

"The native name of the Reef-Heron is 'Kotu-ku'" (*Col. Gudgeon*).

7. Urodynamis taitiensis (Sparrm.).

Urodynamis taitiensis Shelley, Cat. B. Brit. Mus. xix. p. 314 (1891).

a. Adult. Raratonga, Cook Is.

"The native name of the Long-tailed Cuckoo is 'Karavea'; the iris is yellow, the upper mandible dark brown and the lower yellow" (*Col. Gudgeon*).

8. Chasiempis dimidiata (Hartl. & Finsch).

Chasiempis dimidiata Sharpe, Cat. B. Brit. Mus. iv. p. 232 (1879).

Monarcha dimidiata Wiglesw. Abh. zool. Mus. Dresd. 1890–91, no. 6, p. 19 (1892).

a, b. ♂ ♀ adult. Raratonga, Cook Is., March 1901.

Col. Gudgeon writes:—"The native name of this Flycatcher is 'Kakerori'; it has the iris black, and the legs and mandibles steel-blue. It is a rare bird on the island."

This species is new to the British Museum. The male is rather a poor specimen, in moult, the tail being represented by a few partially grown feathers; but the species is a very valuable addition to the National Collection.

9. Aplonis cinerascens Hartl. & Finsch.

Aplonis cinerascens Sharpe, Cat. B. Brit. Mus. xiii. p. 133 (1890); Wiglesw. Abh. zool. Mus. Dresd. 1890–91, no. 6, p. 43 (1892).

a–c. ♂ adult. Raratonga, Cook Is., March 1901.

Col. Gudgeon writes:—"The native name of this Starling is 'Toikaranga'; it has the iris black, with an outer ring of yellow, and the legs and mandibles black."

The British Museum Collection contained an adult pair also collected on Raratonga by Mr. H. Travers.

III.—Birds of Niue or Savage Island.

The following is a list of the species of birds procured by Lord Ranfurly from Niue or Savage I., Friendly Islands. The specimens were forwarded in formaline and afterwards converted into skins.

1. Ptilopus porphyraceus (Forst.).

Ptilopus porphyraceus Wiglesw. Ibis, 1891, p. 575; Salvad. Cat. B. Brit. Mus. xxi. p. 100 (1893).

a. Adult. Niue, Friendly Islands, 17th June, 1902.

The native name for this Fruit-Pigeon is "Kulu Kulu."

2. Porzana tabuensis (Gmel.).

Porzana tabuensis Sharpe, Cat. B. Brit. Mus. xxiii. p. 111 (1894).

a. Immature. Niue, Friendly Islands, 17th April, 1902.

The native name of this diminutive Rail is "Moho."

This young bird differs from the adult in having the upper parts mostly black, scarcely tinged with deep chestnut-olive, and the chin, middle of the throat, fore-neck, and breast whitish.

3. Heteractitis incanus (Gmel.).

Heteractitis incanus Sharpe, Cat. B. Brit. Mus. xxiv. p. 453 (1896).

a. Adult (summer). Niue, Friendly Islands.
b. Adult (winter). " " "

The native name of the American Tattler is "Kui."

4. Vini australis (Gmel.).

Vini australis Salvad. Cat. B. Brit. Mus. xx. p. 43 (1891).

Coriphilus australis Wiglesw. Abh. zool. Mus. Dresd. 1890–91, no. 6, p. 9 (1892).

a, *b*. Adult. Niue, Friendly Islands.

The native name of this small Lory is "Henga."

5. Urodynamis taitiensis (Sparrm.).

Urodynamis taitiensis Shelley, Cat. B. Brit. Mus. xix. p. 314 (1891).

a. Adult. Niue, Friendly Islands.

The native name of the Long-tailed Cuckoo is "Kalue."

6. Collocalia francica (Gmel.).

Collocalia francica Hartert, Cat. B. Brit. Mus. xvi. p. 503 (1892).

a. Adult. Niue, Friendly Islands.

The native name of this small Edible Swiftlet is "Peka Peka."

7. Lalage whitmeei Sharpe.

Lalage whitmeei Sharpe, Cat. B. Brit. Mus. iv. p. 100 (1879); Wiglesw. Abh. zool. Mus. Dresd. 1890–91, no. 6, p. 25 (1892).

a, *b*. Adult et immature. Niue, Friendly Islands.

The native name of this Cuckoo-Shrike is "Hea Hea."

8. Aplonis brunnescens Sharpe.

Aplonis brunnescens Sharpe, Cat. B. Brit. Mus. xiii. p. 132 (1890); Wiglesw. Abh. zool. Mus. Dresd. 1890–91, no. 6, p. 43 (1892).

a–e. Adult. Niue, Friendly Islands.

The native name of this Starling is "Misi."

XXXIX.—*Some Points in the Anatomy of* Acanthidositta chloris, *with some Remarks on the Systematic Position of the Genera* Acanthidositta *and* Xenicus. By W. P. PYCRAFT, F.Z.S., A.L.S.

(Plate XIII.)

INTRODUCTORY.

ONLY one other paper—by the late W. A. Forbes—has ever been published dealing with the anatomy of the aberrant and little-known forms *Acanthidositta* and *Xenicus*. In this paper the author deals only with the syrinx, patagial muscles, and skull and podotheca.

While Forbes devoted his attention primarily to *Xenicus*, though he dissected specimens of both genera, I have perforce had to confine my investigations to *Acanthidositta*; but probably it will be found that *Xenicus* does not differ therefrom in any important particular. In so far as the syringes of these two genera are concerned, Forbes assures us that in "all points *Acanthidositta* appears to agree (with *Xenicus*) in every essential respect."

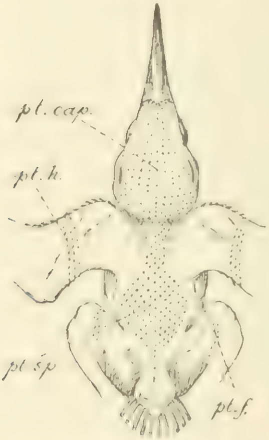
I have been enabled to bring to light some extremely interesting facts concerning *Acanthidositta*, which in some cases seem to conflict with the statement made by Forbes some seven-and-twenty years ago.

For the material on which this work is based I have to thank my kind friends Mr. W. R. Ogilvie-Grant and Mr. F. E. Beddard, F.R.S.

PTERYLOGRAPHY.

Pteryla capitis (text-fig. 34, *pt.cap.*, p. 604).—This extends from the base of the culmen backwards in the form of a narrow band between the eyes, which are prominent, to expand so as to cover the parietal and occipital region of the cranium, and sweeping downwards passes forwards along the lower jaw. From its origin at the culmen the tract branches out on either side to the lores, and this wing extends backwards over the eyelids near its free edge, leaving a bare space between the branch and the main tract. In other words, there is a distinct loreal tract, cut off from the rest of the *pt. capitis*; from this sub-tract the tiny feathers which fringe the eyelid immediately behind its rim are derived.

Text-fig. 34.



Dorsal aspect of *Acanthidositta chloris*, prepared to shew the pterylosis. This specimen had been preserved in formol, and the consequent contraction of the neck has rendered it impossible to shew the neck-tract.

pt.cap. = pteryla capitis; *pt.f.* = pteryla femoralis; *pt.h.* = pteryla humeralis; *pt.sp.* = pteryla spinalis.

The free edge of the eyelid, it should be remarked, is produced into a thin dermal fringe of considerable width, recalling that of *Prionops*—a fact which does not appear to have been previously noticed.

Pt. colli dorsalis.—This is a broad tract, not closely investing the neck, but rising from a duplication of the skin of the neck, which, forming a thin sheet along the mid-dorsal line, spreads out along its free edge to afford the necessary support for the tract. Thus, in section, the tract is T-shaped.

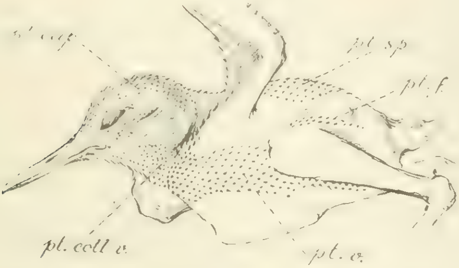
Pt. spinalis.—This tract forms a tolerably broad band along the middle of the back, expanding over the pre-iliac region into an ovoid saddle, which, just caudad of the acetabular region, gives place to a couple of rows of semiplumous feathers, continued backwards to the oil-gland.

Pt. caudalis.—There were ten rectrices, all moulting.

Pt. coll. ventralis.—This is a fairly broad tract, branching high up the neck, and passing backwards into the

Pt. ventralis (text-fig. 35, *pt.v.*).—This tract does not shew the usual division into an inner and an outer branch, but suddenly narrows at a point corresponding with the position of the knee when flexed; from this point inwards it is continued backwards in the usual manner to the cloaca. Over the breast, in the region enclosed by the ventral tract, there occur numerous but sparsely scattered and minute brush-like tufts representing degenerate contour-feathers.

Text-fig. 35.



Lateral aspect of the same specimen, to shew the pterylosis. The fold of skin in which the *pteryla colli dorsalis* is seated is well shewn.

Additional letters: *pt.v.* = pteryla ventralis; *pt.col.v.* = pteryla colli ventralis.

Pt. humeralis (text-fig. 34, *pt.h.*).—Short and feebly developed.

Pt. femoralis (text-fig. 34, *pt.f.*).—Like the *pt. humeralis*, very feebly developed.

Pt. alaris.—The wing is eutaxial; there is no carpal diastema. Primaries 10; 10th long. Carpal covert moderately long, and slender carpal remex. Secondaries 9, the last (9th) degenerate and scarcely distinguishable from its covert. Possibly what appears to be the covert of the 10th remex is actually the 11th remex, since this feather is longer than the covert of remex 9. By way of confirming this hypothesis, it is to be remarked that at the base of this possible 11th remex there is found a minute feather which would represent the covert of remex 10, leaving the vestigial 11th without a covert.

Tectrices :—

T. majores.—The major coverts of the secondaries present no features worthy of comment. On the manus they are markedly degenerate, being shorter than those of the secondaries, and decreasing rapidly in length from the wrist outwards.

T. mediæ.—This series calls for no comment.

T. minores.—These are represented by one complete and one incomplete row.

T. marginales.—This series appears to be quite typical, and offers no points for comment.

Ala spuria.—Only two remiges are borne on the pollex. The outermost feather is of great length—a feature, it may be noted, which also obtains in *Troglodytes*.

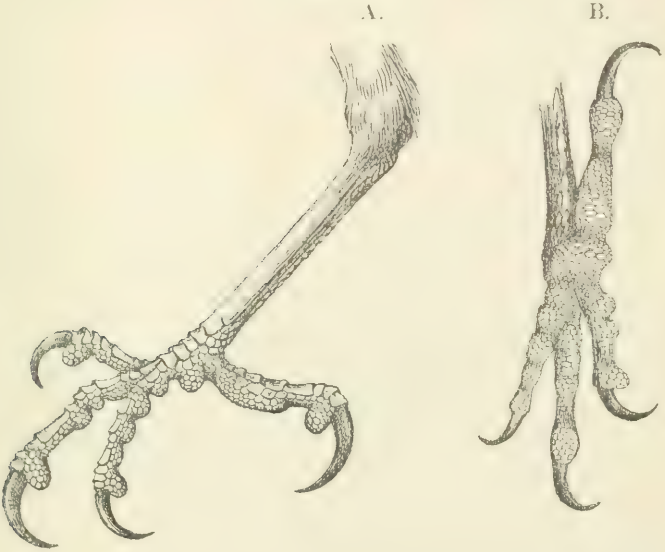
Rhamphotheca.—Simple: the external nares are peculiar, in that they open directly upward in a tumid aperture with round lips (text-fig. 37, A, *na.*, p. 608).

Podotheca (text-fig. 36, A, B).—Acrotarsium invested by a simple horny sheath, which, by a study of the nestling podotheca, is found to be made up by the fusion of about three large scales.

Planta.—This is covered by a series of oblong and moniliform scales. According to Forbes's description of the planta of *Xenicus*, these scales were suppressed along the middle of the series by the meeting of the acrotarsal sheath in the middle line. This podotheca is of the type known as *pycnaspidean*.

Claws.—Long and curved, especially the hallux. The soles of the feet (text-fig. 36, B) demand special mention here, inasmuch as the under surface of the toes shews interesting proofs of adaptation to a perching habit met with also among other Passeres, e. g. *Troglodytes*, but to a less marked degree. Thus, the under surface of each of the toes bears immediately behind the claw a soft and prominent pad covered with small papillæ; behind this is a strongly constricted area covered with transversely elongated papillæ; behind this constriction there succeeds two or more well-marked pads covered with large papillæ. The size and position of

Text-fig. 36.



A. Outer view of left foot, to shew the podotheca and form of the toes.
B. Sole of foot, to shew the slight syndactylism and the peculiar constriction between the pads.

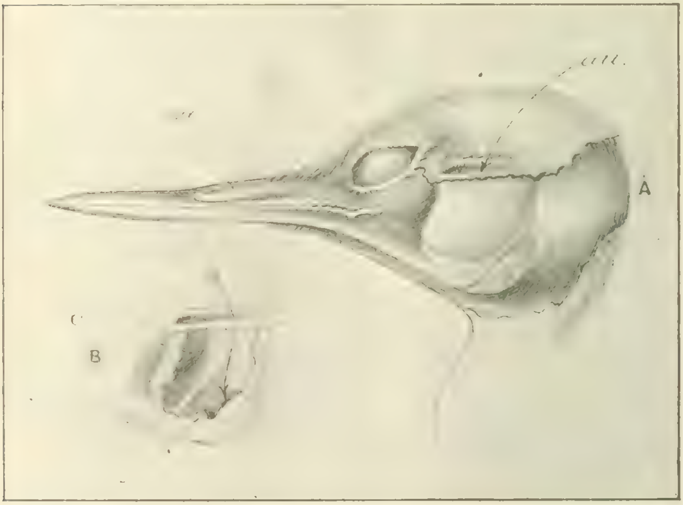
these pads are determined by the length of the phalanges; at the articulation of each joint the skin, as on the under surface of our fingers, thins out and becomes creased. The figure (text-fig. 36) should make these points clear.

In this general topographical survey we may fittingly include an account of the form and position of the external aperture of the ear, which appear to be unique (text-fig. 37, A, B, p. 608). The description thereof is as follows:—

The usual circular aperture at the base of the lower jaw, which makes the passage to the middle ear, is in *Acanthido-*

sitta replaced by a narrow horizontal slit opening rather higher than the level of the top of the normal aperture, and only a little below the level of the posterior canthus of the eyelid. It extends forwards on to the eyeball and backwards on to the skull, its width exceeding the width of the eyelids. Opening horizontally it appears normally to be closed like the pocket of a coat. The chamber to which it gives access is, when explored with a probe, found to be capacious, extending downwards to the level of the quadrato-jugal bar, forwards to the gape, and backwards to the extreme hinder angle of the lower jaw.

Text-fig. 37.



A. Left side view of head of *Acanthidositta chloris*, to shew the form of the nostrils and the remarkable aperture of the ear after removal of the outer skin.

B. Shewing the interior of the aural chamber after cutting away its outer wall.

na. = nostril; *a.a.* = aural aperture (slightly forced open); *e.* = eye; *j.* = jaw. The arrow in the lower figure denotes the passage to the middle ear.

After removal of the outer skin, it is clear that this pocket is formed by the expansion of the normally invaginated skin met with in all birds in this region. It is attached anteriorly by delicate tendinous strands to the quadrato-jugal bar immediately below the eye and caudad by delicate fascia to the hyoid.

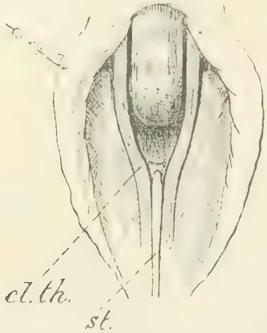
MYOLOGY.

The following muscles are all that appear to call for special remark in this paper.

Dermal Muscles.

Cleido-thyroideus (text-fig. 38).—Arising normally from the larynx, this muscle runs along mesiad of and closely attached to the *pteryla colli ventralis* until within a short distance of the furcula, when it suddenly leaves the skin, and running along the ventral $\frac{1}{3}$ of the bone in question it rapidly attains the middle line; there it runs backwards for a short distance, separated from its fellow of the opposite side only by the narrow *carina sterni*.

Text-fig. 38.



Dissection of the breast of *Acanthidositta chloris*, to shew the insertion of the *cleido-thyroideus* muscles (*cl.th.*).

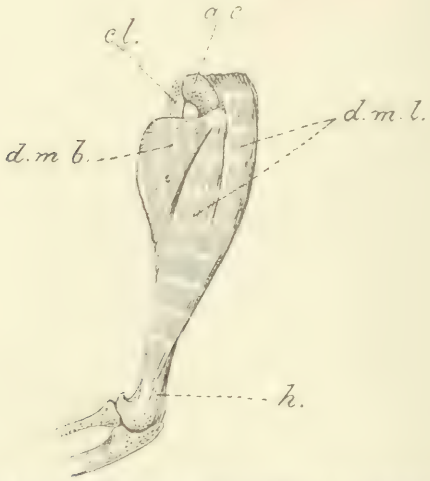
Latissimus dorsi dorso-cutaneus.—This is well developed and arises unusually far back—from the roof of the pelvis in the region of the anti-trochanter. Extending forwards immediately under the skin, laterad of the *pt. spinalis*, it passes eventually into the *cucullaris dorso-cutaneus*.

Dermo-cleido-dorsalis.—This takes the form of a stout but narrow band, in place of the more usual triangular form.

Pectoralis abdominalis.—This muscle was barely traceable.

Deltoideus major (text-fig. 39).—This muscle is peculiar in that in the splitting-up into brevis and major portions a part of the brevis portion arising from the *os humero-scapulare* has become cut off to form the principal part of the belly of the longus portion. As a result, there is a strong tendency towards the separation of this mass to form two muscles inserted by a common tendon into the usual tubercle above the radial condyle. A very little further splitting would divide the muscle into three distinct portions, one inserted into the deltoid crest, and the other two into the tubercle of the radial condyle of the humerus. The highly specialised condition of these muscles shown by *Acanthidositta* I have not met with elsewhere.

Text-fig. 39.



Dissection of the left wing of *Acanthidositta chloris*, to show the *deltoides major et minor*.

Pectoralis propatagialis brevis.—This is represented by a slender tendon inserted into the *tensor patagii brevis* just before it passes into the characteristic tendon.

Tensor patagii brevis.—The tendon of this muscle is partly embedded in the belly of the *extensor metacarpi radialis longus.*

Thigh-Muscles.

The normal Passerine formula obtains in this genus:—A . XY.

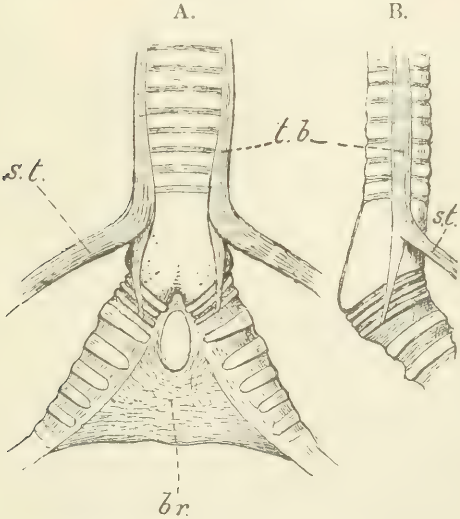
Caud-ilio-femoralis (*femoro-caudal*).—This muscle is moderately well developed: the accessory head is wanting.

Caud-ilio-flexorius.—Both divisions of this muscle are present and fairly well developed.

The Syrinx (text-fig. 40, A, B).

The syrinx of *Acanthidositta* is of the tracheo-bronchial type, and formed apparently by a fusion of the lower rings of the trachea. The resultant tube has the inferior border of its anterior aspect marked by a moderately deep notch.

Text-fig. 40.



A. Syrinx of *Acanthidositta chloris,* front view, shewing the intrinsic muscles and their insertion into the bronchial rings, and the form of the syringeal box and bronchi.

s.t. = sterno-trachealis muscle; *t.b.* = tracheo-bronchialis muscle.

B. Side view of same.

The apparent first bronchial ring is really made up of two closely apposed rings, succeeded by six or seven half hoops moderately wide apart. The bronchidesmus is well developed.

The *tracheo-bronchialis* muscle extends the whole length of the trachea, terminating in a few delicate strands of muscle inserted into the middle of what answers to the 1st bronchial ring. Just before its insertion, near the bottom of the syringeal box, it gives off a strong *sterno-trachealis*.

It will be remarked that the syrinx of *Acanthidositta* is peculiar; it recalls that of *Pipra* on the one hand and of *Todus* on the other, and differs widely from the typical Synallaxine syrinx, which is tracheal.

Forbes (2) described and figured the syrinx of *Xenicus*, comparing it with that of *Todus*. He does not seem to have examined the syrinx of *Acanthidositta*, and this may well account for the lack of agreement between my observations on the syrinx of this bird and the description and figures by Forbes of the syrinx of *Xenicus*, which he assumed was the same in both genera under consideration.

In *Xenicus*, according to Forbes, the intrinsic muscle terminates at the *top* of the syringeal box, as in *Todus*; in *Acanthidositta* it as certainly extends beyond this on to the first bronchial ring, as already described.

Judging by Forbes's description (2), it would seem that *Xenicus* is more degenerate, in so far as the musculature of the syrinx is concerned, at any rate, than *Acanthidositta*. Possibly, however, the differences between the syringes of these two genera, as shown by my dissection of the last-named, are apparent rather than real, the discrepancies being due to our individual interpretation of the facts, which are by no means easy to ascertain. The main point wherein I differ from Forbes concerns the termination of the intrinsic muscle. According to Forbes, this terminates just before reaching the top of the syringeal box. My dissections seem to shew that this muscle ends, in the form of very degenerate fibrous tissue, on the third bronchial ring. There can be no doubt but that the figures of the syrinx of *Xenicus* in Forbes's paper lose much of their value by their extremely diagrammatic characters. As to *Acanthidositta,* he remarks that it agrees, in the structure of the syrinx, in every essential respect with *Xenicus*.

The Intestinal Convolutions and Gizzard.

The intestinal convolutions, unravelled on Dr. Chalmers Mitchell's system, are of the type which he has shown to be characteristic of the Passerines.

The gizzard when opened displayed certain characters in the lining membrane worthy of record.

The cardiac extremity, as far as the level of the cardiac and pyloric apertures, was lined with a simple mucous membrane; all the remaining cavity below these apertures was thrown into longitudinal folds, transversely striated and of a chitinous texture.

OSTEOLOGY.

The skeleton of *Acanthidositta* presents many striking points of resemblance with the Synallaxine skeleton, upon which we shall enlarge presently.

The Skull (Pl. XIII. figs. 1–5).—One of the most striking superficial characters of the skull of *Acanthidositta* is the marked depression and great width of the cranium. The interorbital region of the frontals is much constricted. There is a well-marked cerebellar prominence, but the supraforaminal and lambdoidal ridges are ill-defined. The lateral occipital wings are but feebly developed, forming but a low ridge caudad of the tympanic membrane.

The basitemporal plate is inflated so as to form a pair of tumid swellings separated by a median groove. By the fusion of its free edge with the ossified connective tissue forming the anterior wall of the *recessus tympanicus anterior,* the Eustachian grooves have been converted into closed channels. The parasphenoidal rostrum is long and slender, and passes abruptly forwards from the cranium.

The tympanic cavity is moderately large, shallow, oval in outline, and looks downwards, outwards, and forwards. The mesial border of its slightly raised rim extends inwards as far as the level of a line running parallel with the long axis of the skull from the outer margin of the foramen magnum. The lateral occipital ring is continued outwards and forwards beyond the tympanic membrane, so as to form a scroll-shaped niche or pocket. The uppermost border of this flange does not extend above the level of the tympanic rim. Immediately above this flange, and separated therefrom by a notch, is a low ridge running forwards for a short distance. In *Synallaxis orbignii*, for example, this notch-divided ridge is continuous with the flange.

After the removal of the tympanic membrane this cavity will be found to be extremely shallow, leading upwards and backwards, with a mass of diploid tissue in which a small and posterior tympanic recess can be traced—the rudiments apparently of the larger recess usually found in birds. The anterior tympanic recess which opens into the floor of the antero-ventral moiety of the cavity is somewhat more developed. The superior recess is apparently wanting in the Passerine skull.

A "squamosal prominence" is not distinguishable in this skull; and there is but the merest apology for a *processus zygomaticus squamosi*; this process is separated from the termination of the free end of the rim of the tympanic cavity only by a small, barely perceptible notch.

The otic and squamosal heads of the quadrate are placed close together.

The orbit is moderately large, and but little protected from above, the interorbital region of the frontal being deeply cut away. The interorbital septum is membranous, but strengthened by a bony bar extending in the form of a slender curved rod backwards from the middle of the free hinder border of the mesethmoid, and terminating just above the optic foramen.

The lachrymal is wanting; I searched carefully in two separate skulls for evidence of this bone and found none. The lachrymo-nasal fossa is greatly reduced.

The mesethmoid is extremely small, and is partly filled up by the large and inflated antorbital plate. The nostrils are of the schizorhinal type (p. 619).

The exact limitations between the maxilla and pre-maxilla cannot be made out; but this portion of the jaw is long and slender, triangular at its base, and has a flattened culmen and a slightly sinuous free edge. There is the faintest possible trace of a notch at the tip of this beak.

The maxilla, indistinguishably fused with the palatine, bears unusually long and slender maxillo-palatine processes, formed apparently by the backward production of the infero-internal angle of the maxillo-palatine plate—that is to say, these processes appear to spring from the point where the quadrato-jugal bar enters the maxilla. The processes are continued backwards so as to terminate mesiad of the large and spongy antorbital plate in the form of a strap-shaped blade with a rounded free end.

In the quadrato-jugal bar no separate elements can be distinguished.

The *vomer* is of considerable size, and presents a pair of long limbs and a broad deeply notched free end. Anteriorly, for nearly half its length, it rests upon the maxillo-palatine processes.

The *palatines* send downwards from their dorsal border a deep concavo-convex plate, the concavity inwards. The free edge of this plate at the articulation of the pterygoids forms a deep blade-shaped keel. From the convex surface there runs forwards a long slender shaft to fuse with the maxilla, and this shaft may be regarded as prolonged backwards into a short spur, the "transpalatine process."

The *pterygoids* are moderately long, sigmoidally curved bones having a slipper-shaped free end, which is applied to the sides of the basisphenoidal rostrum. The palatines articulate by an oblique joint with the outer border of this elliptical "foot," which apparently represents the *hemi-pterygoid.*

COMPARATIVE REMARKS.

The skull of *Acanthidositta* appears to agree most nearly with that of the Synallaxine birds; in some particulars, indeed, this resemblance is very striking. As I shall shew presently, this skull also presents much in common with forms not included in the subfamily. Of these, some must undoubtedly be placed within the group; others are nearly related thereto, and this not on the evidence of the skull alone, other parts of the skeleton tell the same tale.

The skull of *Acanthidositta* agrees with a considerable number of the forms at least which make up the subfamily *Synallaxinæ* of the 'Catalogue of Birds of the British Museum,' in that the anterior nares are of the Schizorhinal type, while the maxillo-palatines are long and slender, embracing the under surface of the vomer. Further examination may shew that some of the species now included in this group do not share this peculiarity. On the other hand, I have discovered that several species included in allied subfamilies are Synallaxine in this particular at least, and thereby differ from the forms with which they are associated.

Among the skulls which present, in the matter of the form of the external nares and of the maxillo-palatine, a very close agreement, there will be found on the other hand slight, but definite, differences in the form of the tympanic cavity.

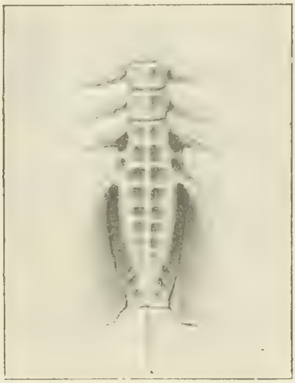
In *Acanthidositta* we have the simplest, and therefore probably the most primitive, condition of this region; where the tympanic wing of the exoccipital is but slightly developed, and does not extend upwards beyond the level of the distal border of the tympanic rim—for the attachment of the tympanum. The postorbital process and the *processus articularis squamosi* are represented by mere tubercles. In *Synallaxis* and *Siptornis*, where the tympanic cavity has shifted downwards and inwards still more than in *Acanthidositta*, so as to open on the ventral instead of the lateral aspect of the skull, the tympanic wing rises above the level of the periphery of the tympanum; while the *processus zygomaticus squamosi* has become a broad plate extending upwards to join the postorbital process, but bearing a fenestra between them. This is most marked in *Siptornis*. In *Cinclodes*, *Pseudocolaptes*, and *Homorus* the postorbital process is more strongly developed, and distinct from the *proc. squamosi*; as in the foregoing types, the tympanic wing rises above the periphery of the tympanum.

But in *Cinclodes* there is a low ridge running from the *processus squamosi* to the free projecting upper end of the tympanic wing, and in *Homorus* the ridge becomes a broad outstanding ledge forming, by its junction with the tympanic wing, a pent-house over the head of the quadrate. In *Pseudocolaptes* there is a similar ridge running from the *processus articularis squamosi*, which runs up to join the tympanic wing and so forms a shallow overhanging pent-house above the tympanic cavity. There is no trace of this last in *Acanthidositta*.

The Vertebral Column.

In so far as the presynsacral vertebræ of *Acanthidositta* are concerned, there is little that need be said. All are free. The last five cervical and the first two thoracic bear well-marked hypapophyses, and this is true also of the Synallaxine forms already referred to.

Text-fig. 41.



Ventral aspect of synsacrum, to shew the deep pittings.

The synsacral vertebræ of *Acanthidositta* are remarkable for a series of deep pits which occur in pairs separated by a median bony ridge along nearly the whole ventral aspect of this fused mass (see text-fig. 41). Only the last four caudals lack these pits, and this because the centra are laterally compressed. The synsacrum is relatively long and narrow, the transverse processes shortening rapidly from the 1st sacral backwards. The bone at the bottom of the pit (inverted during life) is reduced to a paper-like thinness.

Only in *Synallaxis*, so far, have I found these pits as well developed. In *Siptornis, Homorus, Cinclodes*, and *Pteroptochus* they are only imperfectly developed anteriorly, posteriorly they are deep; in *Pipra* the reverse is the case. In *Pseudocolaptes* and *Philepitta* they are wanting altogether, In other birds not even remotely related to these forms I find, here and there, minute traces of these pits—such occur, for example, in *Turdus*.

The Ribs.

Five pairs of ribs reach the sternum. The uncinate processes are very long and slender, and this obtains also in the *Synallaxinæ*.

The Shoulder-girdle and Sternum.

The shoulder-girdle of *Acanthidositta* is Passerine in type. The *coracoid* and *corpus sterni* are subequal in length; there is no procoracoid processes.

The *furcula* is only slightly arched; and the expanded free end does not overlap on to the acromion process of the scapula. The *hypocleideum* is small.

The *scapula* is abruptly curved at its free edge.

The *corpus sterni* bears a moderately well-developed keel; the *spina interna* is wanting, and the *spina externa* is only very slightly forked at its free end, thereby approaching *Philepitta*, where the fork is wanting. In *Synallaxis, Siptornis*, and *Cinclodes*, it is to be noted, the *spina externa* is by no means well developed.

The *anterior lateral processes* are long, slender, and directed forwards; the *posterior lateral processes* are wonderfully long and have slightly expanded free ends.

The Pelvic Girdle.

The innominate of *Acanthidositta* recalls that of *Pipra* in that the ischio-pubic fissure is extremely narrow, whereas in the Synallaxine forms it is of great width, owing to the fact that the ischium sends down on to the pubes a long slender rod of bone. In *Pipra*, as in *Acanthidositta*, the transverse processes of the synsacrum decrease in length from the sacral region backwards; but the innominate of *Acanthidositta* is peculiar, in that its dorsal plane is very narrow. The *pre-ilia* are widely separated and relatively short. The ischia are produced backwards for a considerable distance, lying parallel with the pubes, and thus practically closing the ischio-pubic fissure. The pubes are moderately long, slender, and bowed slightly downwards.

SUMMARY.

It is now just seven-and-twenty years ago since Forbes (2) laid the foundation-stone of our knowledge of the anatomy and systematic position of *Acanthidositta* and *Xenicus*. These curious forms had hitherto been referred to a position within the "*Certhiidæ*"—an "Oscinine" group, with which, as Forbes shewed, they have nothing whatever to do. "As regards the affinities of the *Xenicidæ*," wrote this author, "the 'haploophone' form of their syrinx, combined with the complete loss of a vinculum, shews that it is only with the *Pipridæ* (including the *Cotingidæ*), *Tyrannidæ*, *Pittidæ*, and *Philepittidæ* that they can be compared. From all of these they differ markedly, however, in the number of rectrices, the ocreate tarsus, and the nature of the syrinx, the latter never having the form of a complete bony box, and never lacking a bronchial 'intrinsic' muscle in any of the families just enumerated. The *Pittidæ* they approach somewhat in their general *facies*, short tail, and long tarsus, though the tarsal scutellation is different in the two forms."

My own conclusions on this matter do not altogether harmonise with those just quoted. The evidence, I venture to think, rather favours the view that the nearest allies of these birds are the *Furnariidæ* of Garrod. The same form of the maxillo-palatine processes and the schizorhinal nares seem to be met with in all the *Furnariidæ* and in *Acanthidositta*. The peculiar form of the nares was, by the way, a point which Forbes failed to notice in his report on *Xenicus*. He describes the nostrils of *Xenicus* indeed as *holorhinal*, but in this he was probably mistaken.

The form of the syrinx and other small features will be held probably a sufficient bar to prevent the introduction of *Acanthidositta* and *Xenicus* into the *Furnariidæ*, but they may be allowed for the present to occupy a place midway between the *Pipridæ* on the one hand and the Tracheophone types on the other.

So far this sequence promises well; for from the *Pipridæ* we pass to the *Cotingidæ*, and thence to the *Eurylæmidæ*. Dr. Gadow, like Forbes, considers that the *Xenicidæ* are nearly allied to the *Pittidæ*.

Garrod was right, I think, in forming a separate family—the *Furnariidæ*—for those Tracheophone types which agree in having schizorhinal nares and long and slender maxillo-palatine processes. *Acanthidositta*, but for its haploophone syrinx, might almost be included in this family. This organ, however, with the peculiar aural aperture and the primitive condition of the *deltoides major* muscles, forms a combination of characters perhaps sufficiently important to justify the formation of a separate family, the *Acanthidosittidæ*, for the reception of the genera in question.

The *Furnariidæ*, by the way, will have to be further enlarged to receive *Homorus*, *Cinclodes*, and *Pseudocolaptes* which are schizorhinal, the typical *Dendrocolaptidæ* being holorhinal.

The *Tyrannidæ* will, I believe, prove to be less closely related to the Tracheophone forms than is generally supposed; their affinities appear rather to be with the *Pittidæ*.

Until I have completed my study of the Formicaroid and Dendrocolaptoid forms I can come to no more definite conclusion as to the systematic position of the *Acanthidosittidæ* than has here been offered. Further investigation will, I suspect, shew that the *Acanthidosittidæ* stand nearest the *Synallaxinæ*.

The problem of the classification of the non-Oscinine Passeres is bristling with difficulties, and has produced several distinct systems of arrangement—Garrod, Forbes, Sclater, Salvin and Godman, Sharpe, and Gadow being among the most notable contributors. Each, in attempting to solve the riddle, has arrived at a separate solution!

In that vast treasure-house, the British Museum of Natural History, much new material has collected, and this I hope to draw upon in attacking the problem afresh.

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EXPLANATION OF PLATE XIII.

Fig. 1. Skull of *Acanthidositta chloris,* side view to shew the postorbital region, schizorhinal nares.

1 *a*. The same skull, to shew the palate.

1 *b*. The same skull, top view, to shew the form of the nares.

Fig. 2. Skull of *Pitta baudi,* side view, to shew the postorbital region for comparison with the skull of *Acanthidositta.*

2 *a*. The same skull, top view, to shew the form of the nares.

Fig. 3. The skull of *Synallaxis ægithaloides,* side view, to shew the schizorhinal nares.

3 *a*. The same skull, to shew the form of the palate.

3 *b*. The same skull, top view, to shew the form of the nares.

Fig. 4. The pterygo-palatine articulation of *Acanthidositta.*

Fig. 5. The pterygo-palatine articulation of *Pitta* for comparison with that of *Acanthidositta.*

XL.—*The Fourth International Ornithological Congress.*

The International Ornithological Committee held its Fourth Quinquennial Congress at the London University, Imperial Institute Buildings, during Whitweek.

Some 300 members from all parts of the globe, including most of those best known in the ornithological world, attended.

Dr. R. Bowdler Sharpe was President, with Dr. E. Hartert and Mr. J. L. Bonhote as Secretaries; while Mr. C. E. Fagan, of the British Museum, acted as Treasurer. These gentlemen were assisted in their duties by Drs. Godman, Sclater, and Penrose, the Hon. Walter Rothschild, Messrs. Meade-Waldo, Ogilvie-Grant, and Witherby, who formed the Organising Committee. The Ibis was also well to the fore, as the emblem of a very prettily designed badge, universally worn during the meetings.

Among the many Foreign Delegates and Ornithologists who were present we may notice: Dr. Oustalet of Paris, President of the Congress of 1900; Dr. Bureau of Nantes; Baron de Guerne; MM. Ternier, Loyer, and Debreuil, of Paris; Dr. R. Blasius of Brunswick; Hans, Graf v. Berlepsch and Dr. Reichenow of Berlin; Dr. Lorenz of Austria; Dr. Helm of Chemnitz. Hungary sent a strong contingent, including Herr Otto Herman, Herr Stefan Chernel von Chernelhaza, Herr F. A. Cerva, Dr. G. Hoòrvath, Herr T. Csörzey. Italy was represented by Dr. Giglioli and Count Arrigoni degli Oddi; Holland by Baron Snouchaert van Schauburg and Dr. Büttikofer; Belgium by Dr. Alphonse Dubois; Russia by Dr. Bianchi of St. Petersburg, and Baron Loudon. From Sweden came Dr. Einar Lönnberg; from America, Dr. Stejneger, Mr. Frank M. Chapman, and Dr. Dwight; from Switzerland, Drs. Fatio and Studer; from Bulgaria, Dr. Paul Leverkühn; from Madeira, Padre Ernesto Schmitz. Australia sent Mr. F. M. Littler, and Mr. F. M. Fleming came from Toronto. British Ornithologists attended in numbers, most of the well-known members of the Union were present; Bird Protection was represented by a strong contingent, including Dr. Montague Sharpe, President, and Mr. and Mrs. Lemon, Secretaries of the Royal Society for the Protection of Birds.

The members held an informal meeting at the Imperial Institute Buildings on Whit Monday evening, and settled down to work on the following morning. The Congress was formally opened by Dr. Oustalet, the ex-President, with a few short and appropriate words. He then vacated the Chair in favour of Dr. Sharpe, who gave a most instructive and interesting address on the origin and progress of the national bird-collection in the British Museum. The Congress was divided into five Sections, and the following gentlemen selected as Presidents and Secretaries thereof:—

Section I.—SYSTEMATIC ORNITHOLOGY AND GEOGRAPHICAL DISTRIBUTION.
President. Dr. P. L. Sclater.
Vice-Presidents. Hans, Graf v. Berlepsch and Prof. Dr. Reichenow.
Secretaries. Dr. Parrot and Mr. Ogilvie-Grant.

Section II.—MIGRATION.
President. Herr Otto Herman.
Vice-Presidents. Dr. Bianchi and Mr. Howard Saunders.
Secretaries. Herr Titus Csörzey and Mr. H. F. Witherby.

Section III.—BIOLOGY AND OOLOGY.
President. Dr. Fatio.
Vice-Presidents. Dr. L. Stejneger and Prof. Dr. H. A. Giglioli.
Secretaries. Baron Snouchaert van Schauburg and Mr. E. Bidwell.

Section IV.—ECONOMIC ORNITHOLOGY.
President. Mr. H. E. Dresser.
Vice-Presidents. Prof. Dr. Blasius and Prof. Dr. Einar Lönnberg.
Secretaries. Herr Chernel von Chernelhaza, Dr. F. G. Penrose.

Section V.—AVICULTURE.
President. Mr. E. G. B. Meade-Waldo.
Vice-Presidents. Freiherr Hans von Berlepsch, Baron de Guerne.
Secretaries. Dr. Büttikofer and Mr. D. Seth-Smith.

The following gentlemen were elected Vice-Presidents of the General Meetings:—His Grace the Duke of Bedford, Prof. Dr. Oustalet, Prof. Giglioli, Prof. Reichenow, Herr Otto Herman, The Hon. W. Rothschild, Dr. Godman, Dr. Sclater.

In the afternoon, meetings of Sections I. and IV. were held. At the first-mentioned, Graf von Berlepsch gave an interesting account of some new Neotropical birds, Dr. R. Blasius spoke at some length on the never-ending theme of nomenclature, and Dr. Louis Bureau read a paper dealing with the Roseate Tern on the coast of Brittany. In the fourth Section, that devoted to Economic Ornithology, a most successful meeting was held. Mr. T. Digby Piggott read a paper on the Protection Laws in Great Britain and Ireland, regretting the absence of uniformity in the various countries and making some suggestions, regarding which he hoped the Congress would express some definite opinion. In the same Section Sir John Cockburn described the Protection Acts of Australia, and an interesting discussion on these two papers followed, in which many members took part.

In the evening, a visit, by the courtesy of the Directors, was paid to the Exhibition at Earl's Court, and, although the arrangements had to be somewhat modified owing to a recent fire in a part of the grounds, most of the members met together and a very enjoyable evening was spent.

On Wednesday morning the General Meeting was opened by a paper by Mr. Frank M. Chapman on "What constitutes a Museum Collection of Birds?" in the course of which the method at the British Museum came in for high praise, as exceeding in instructive value any other collection the lecturer had hitherto seen. Great stress was laid on the two main objects to be borne in mind, viz. adequate exhibition and opportunities for research. The American methods were described and illustrated by an excellent series of lantern-slides. Dr. Dwight read an important paper on colour-change as brought about by abrasion, which was followed by a short paper by Dr. Leverkühn on the nesting of the Egyptian Vulture and Imperial Eagle. Herr Otto Herman's paper on Bird-Migration, a summary of which was read in English by Mrs. Ilona Ginever, dealt, in the first place, with the various theories on migration; and then proceeded to describe the methods used in Hungary for recording the arrival of some of the commoner migrants, the Swallow in particular, and the conclusions arrived at therefrom. The meeting was brought to a close by Mr. Scherren's paper on the first Bird-List of Eber and Peucer.

In the afternoon, meetings of Sections I. and III. were held: in the former Mr. Pycraft lectured on "Nestling Birds and their Relation to Evolution," and suggested that a careful study of nestlings tended to shew that all birds were at one time arboreal and nidifugous, and that they had diverged in two directions, those nesting on the ground having become still more nidifugous, while among those that still nested in trees the young had become further specialised and more helpless. In this Section also Padre Schmitz read a paper on the Birds of Maderia; and other communications of technical interest were made by both Count and Freiherr von Berlepsch.

In Section III. the members were treated to what was perhaps, from the popular point of view, one of the greatest treats of the Congress, by the exhibition of a beautiful series of slides, taken and prepared by Mr. Frank Chapman, of Flamingoes and Pelicans at their breeding-quarters in the Bahamas and Florida respectively. The details in the life-history of these species elucidated and explained by these splendid series of slides are invaluable and also an object-lesson in what may be accomplished by time, energy, and perseverance.

In the evening a Conversazione was held at the Natural History Museum, which was well attended by the members as well as by a number of specially invited guests.

Thursday was, by the kindness of the Hon. W. Rothschild, spent at Tring. The event of the day was his lecture on "Extinct and vanishing Birds," illustrated by the marvellous collection contained in the Tring Museum; and, to make the exhibition as complete as possible, Mr. G. E. Lodge had produced a wonderful picture of the small Dinornis, and Mr. Frohawk life-size reproductions of the Moa, the Giant Rail (*Leguatia*), and the Solitaire. The paper, which was read in the Victoria Hall, was divided by the lecturer into three heads: birds already extinct, those on the verge of extinction, and those threatened with extinction, and the more notable points on all headings were well brought forward and illustrated. After the lecture a bounteous lunch was served, and the party then divided—some going to examine further specimens in the Museum, others driving to the Reservoirs or round the Park.

Friday morning was devoted to a General Meeting, at which Dr. Bureau exhibited a bound volume of Brisson's plates, coloured. The lettering on the original plates had been removed and new lettering added, suggesting therefore that it was not merely a collection of the plates coloured, but rather a separate edition. Dr. Bureau stated, however, that he had been unable to see or hear of a similar example. The copy in question had been purchased at the sale of the late M. Milne-Edwards's library. Mr. Bonhote read a paper, illustrated by specimens and slides, of his experiments in hybridising Ducks; and, after shewing the hybrids he had obtained, which included crosses between three, four, and five distinct species, and for which a special terminology was suggested, he then went on to point out that hybrids shewed great range of variation and that such variations followed on the lines of "pœcilomeres." It was also suggested that variations generally followed definite lines, and that many so-called cases of reversion were merely due to variation on these lines. Dr. Leverkühn brought to the notice of the Congress some of Prof. Naumann's correspondence, and he hoped the Congress would support the meditated publication of these letters. Dr. Hartert's paper dealt with the "Principal Aims of Modern Ornithology," laying stress on accuracy of labelling and careful and minute study. Dr. Wilson's paper on the Birds of the Antarctic, illustrated by his splendid series of slides, brought the morning's work to a close.

In the afternoon the Lord Mayor held a reception at the Mansion House which was largely attended, and an opportunity of visiting the Guildhall was also taken advantage of by many members.

In the evening a very successful dinner was held at the

Frascati Restaurant, at which the Foreign Members were the guests of the B. O. U.

Saturday, being the last day of real work, was of necessity a somewhat busy one. Proceedings were opened by Mr. Bruce, who gave a very interesting account of the Scottish Antarctic Expedition, illustrated by a beautiful series of slides.

In the Avicultural Section Mr. Seth-Smith read a most interesting paper on this branch of ornithology, pointing out how much may be accomplished by scientific aviculture in solving many problems, especially in the direction of changes of plumage, moult, pairing- and nesting-habits, polyandry, and so forth. The lecture, which was largely attended, was followed by a discussion on several points relating to the subject, more especially as regards the importation of live birds; but, owing to lack of time, the Section rose without passing any definite resolutions.

In the Economic Section a paper by Herr Svetozar was read in his absence by Dr. Penrose, the Secretary; it dealt with the Sparrow and its ravages, and an interesting discussion followed, raising doubts as to whether the Sparrow was any practical use as an insect-destroyer.

In the Migration Section, Dr. Helm read a paper on the Autummal Migration of the Starling.

The chief paper of note in Section I. was one by Dr. Dwight on the "Significance of Sequence in Moults and Plumages." Dr. Dwight is well known in America for his very careful and accurate work on this subject, and his paper on the plumages of the Passerine Birds of New York is one that might well be imitated by some young and energetic ornithologist in this country. How many of us know exactly how and when the Sparrow moults?

In the afternoon the concluding meeting was held. The President stated that at a meeting of the Permanent Committee it had been decided that the next Congress should be held in Berlin, with Dr. Reichenow as President; but that if it was found impracticable to hold it in Berlin it should be held in Brussels under the Presidentship of Dr. Dubois.

An amendment was moved by Dr. Sclater that in the event of Dr. Reichenow being unable to accept the Presidentship, the Congress should meet in some other city in Germany under the Presidency of Dr. Blasius. This amendment was agreed to. Mr. Rothschild then moved that the Congress should communicate with the Governments of Australia, Tasmania, and New Zealand, asking them to endeavour to put an end to the destruction of Penguins and other birds—boiled down for oil—which was going on in the Macquaries and other islands; after some discussion, this was agreed to, and the Congress was formally dismissed by the President.

The first three days of the following week were devoted to excursions. On Monday a special train conveyed the members to Ridgmont, whence Woburn Park was reached. The Duke and Duchess of Bedford met the party and the first halt was made to enable the Giraffes, Ostriches, and European Bison to be viewed, after which a considerable drive was made through the Park, affording a splendid view of the various deer and antelopes, and finally near the Abbey of enormous flocks of water-fowl. On Tuesday a visit was paid to Cambridge, where many matters of interest to ornithologists were laid out in the Museum, and luncheon was served at Magdalene College. Dr. Sharpe, in a short speech thanking the Master and Fellows for having allowed the Congress to lunch in their Hall, proposed the health of Professor Newton, which was warmly seconded in short and appropriate speeches by Drs. Oustalet, Reichenow, Fatio, Mr. F. M. Chapman, and others. Professor Newton, in replying, reminded the Congress that they had come on a bird-nesting expedition to see the nest whence had flown 'The Ibis,' now so widely known, and that the nest was made and the young 'Ibis' fledged in the room immediately above that in which they had left their coats and hats. After luncheon a number of members drove to Fen Ditton to see Mr. Bonhote's Aviaries, whilst others went round the Colleges. At 5 o'clock those going to Bridlington left by special train, reaching their destination late that night. The following morning they started off in brakes under the guidance of Mr. Boynton, who had charge of the local arrangements, and after visiting Flamborough lighthouse and the cliffs adjoining, proceeded to Bempton, where fine views were obtained of the cliff-climbers and their method of work. Mr. Nelson, of Redcar, had kindly distributed a specially printed extract relating to the cliff-climbing from his forthcoming 'Birds of Yorkshire,' and personally acted as cicerone. Luncheon was served at the cliff edge in a tent, and, after a photograph had been taken, the majority returned to Bridlington and London, thus terminating what was universally acknowledged as a highly successful and pleasant gathering.

XLI.—*Notices of recent Ornithological Publications.*

[Continued from p. 498.]

89. *'Avicultural Magazine.'*

[Avicultural Magazine. The Journal of the Avicultural Society. New Series. Vol. iii. Nos. 4–9. London: Feb.–July 1905.]

In these numbers our contemporary continues its career of interesting and useful work, and succeeds in adding greatly to our knowledge of the habits of birds. Allowance must, of course, be made to some extent for the different conditions in which birds live in cages, aviaries, and the wild state; but with regard to their notes, their nests and eggs, not to mention other details, we are much indebted to the careful observations made by various members of the Avicultural Society. Among so large a number of articles of varying style, it would be invidious to make any selection, but we may mention Dr. Butler's *résumé* of our knowledge of the Duration of Incubation.

Mr. Beebe's "Notes on the Psychology of Birds" is of very general interest; while the papers by Capt. Horsbrugh on the Bloemfontein district, by Mr. L. M. Seth-Smith on that of Uganda, and by Mr. Trevor-Battye on the breeding of

Ammoperdix heyi take us, in spirit, to scenes of exceptional interest.

The management of Aviaries and the successful breeding of various species therein combine with accounts of holiday-tours to fill the pages of the Journal.

90. *Bangs on new American Subspecies.*

[(1) Two new Subspecies of Tropical American Tyrant-birds. By Outram Bangs. Proc. Biol. Soc. Washington, xvii. p. 113.

(2) Descriptions of Seven new Subspecies of American Birds. By Outram Bangs. *Op. cit.* xviii. p. 151.]

The two Tyrant-birds are *Serphophaga cinerea cana*, a northern form of *S. cinerea*, and *Todirostrum cinereum finitimum*, an extreme northern form of the widely ranging *T. cinereum*. The seven subspecies described in the second paper are *Crypturus soui mustelinus* from Santa Marta, *Scardifella inca* from Honduras, *Claravis pretiosa livida* from Colombia, *Geotrygon martinica digressa* from Guadeloupe, *Dacnis cayana callaina* from Chiriqui, and *Callospiza lavinia cara* and *Phœnicothraupis rubica confinis*, both from Honduras.

91. *Bangs on* Coccyzus cinereus.

[A Correction of Barrow's Record of *Coccyzus pumilus* from Concepcion del Uruguay. By Outram Bangs. Proc. Biol. Soc. Washington, xvii. p. 165.]

Mr. Bangs has examined the specimens of the three Cuckoos from Uruguay, the first two of which were referred by Mr. Barrow in the 'Auk' for 1884 (i. p. 28) to *C. pumilus*, and the third to *C. cinereus*, and finds that they all belong to *C. cinereus*. *C. pumilus* is a form of Venezuela and Colombia, and not likely to occur in Uruguay.

92. *Bangs and Zappey on the Birds of the Isle of Pines.*

[Birds of the Isle of Pines. By Outram Bangs and W. E. Zappey. Am. Nat. xxxix. pp. 179–215, April 1905.]

The Isle of Pines lies in the Caribbean Sea some sixty miles south of the western end of Cuba, and, though frequently alluded to in the writings of Poey, Gundlach, Cory, and Ridgway, has not yet had a monographer at work upon its birds. Mr. Bangs has therefore done well in joining Mr. Zappey (who has twice visited the island and made large collections of its birds and field-notes upon them) in preparing the account of its Avifauna now before us. The Isle of Pines is so near to Cuba, and has been so recently separated from it, in a geological sense, that it could not be expected to produce many endemic forms. But some few of its 83 feathered inhabitants have become so far differentiated from the Cuban representatives as, according to the views of the authors, to justify their separation. The changes undergone are, we are told, "chiefly in sizes and proportions," the colours remaining nearly the same. Thus *Ardea repens* (subsp. nov.) is similar to *A. occidentalis,* but "very much smaller"; *Grus nesiotes* (sp. nov.) is like *G. mexicana*, but smaller and darker; *Saurothera merlini dicolor* (subsp. nov.) is also smaller than the Cuban form; *Prionotelus temnurus vacuus* is again smaller than *P. t. typicus*; *Myiadestes elizabethæ retrusus* is of the same size as *M. elizabethæ* of Cuba, but much paler in colour; and *Spindalis pretrei pinus* is considerably larger than the typical species from the main island. We may remark that the supposed new subspecies of *Myiadestes* is based on a single specimen, which, in our opinion, is hardly sufficient for the establishment of a subspecies.

Mr. Zappey contributes some good field-notes to this paper and some nice illustrations to the text, taken from his photographs.

93. *Chapman on the American Flamingo.*

[A Contribution to the Life-history of the American Flamingo (*Phœnicopterus ruber*), with Remarks upon Specimens. By Frank B. Chapman. Bull. Am. Mus. N. H. xxi. p. 58.]

This is the scientific version of Mr. Chapman's successful researches among the breeding-grounds of the American Flamingo in the Bahamas, of which we have already noticed the popular narrative published in the 'Century Magazine' and 'Bird-Lore' (see above, p. 272). After a summary of the previous information on the subject, Mr. Chapman gives us an account of his two visits to the Bahamas in 1902 and 1904, and of the results of the observations made on these occasions. These results embrace full particulars as to the nesting-ground, nest, eggs, and mode of incubation, together with full descriptions of the young during the various stages of their growth, illustrated by a series of text-figures prepared from photographs taken by the author. It follows that so far from the breeding-habits of the Flamingo being any longer mysterious we are now made better acquainted with them than with those of many well-known species which are quite familiar to us.

Mr. Chapman points out that on comparing measurements of the embryos and young of the Flamingo with those of the adult, a surprising increase in the length of the tarsus as age advances is manifest. The tarsus, which in the embryo is but a little longer than the middle toe and claw, and about one-tenth of the total length of the bird, becomes in the adult three times the length of the middle toe and claw, and approximately one-fifth of the total length of the bird. This would clearly indicate that the Flamingo is descended from a short-legged ancestor, and is perhaps little more than a "long-legged Goose," as some authors have called it. The remarkable form of the bill, as Mr. Chapman shews, is also a character which does not exist in the newly-hatched bird, and must have been recently acquired.

As Mr. Chapman has probably a good supply of specimens in store we would beg him to continue his excellent work by having an accurate comparison made between the ptilosis of *Phœnicopterus* and that of the Anseres on one side, and the Herodiones on the other, to ascertain which of the two groups it most nearly resembles.

94. *Germain and Oustalet on the Birds of Lower Cochin China.*

[Catalogue des Oiseaux de la Basse-Cochinchine. Par Rodolphe Germain et E. Oustalet. Bull. Soc. Nat. d'Acclim., Juin 1905, p. 169.]

This is the commencement of a series of articles on the birds of Lower Cochin China, where the first-named author carried on observations for more than five years, while M. Oustalet, whose work on the Ornithology of French Indo-China is well known (see above, p. 488), supplies the scientific part of the memoir.

The present article enumerates the Parrots and Vultures of Lower Cochin China and contains M. Germain's field-notes on these birds.

95. *Hantzsch on the Birds of Iceland.*

[Beitrag zur Kenntnis der Vogelwelt Islands. Von Bernhard Hantzsch. Berlin, 1905. Pp. i–vi, 1–341; 26 illustrations in the text and a map.]

This book should certainly be carefully studied by all interested in Palæarctic Birds, for it enters into the subject of the Avifauna of Iceland much more fully than did the Rev. H. H. Slater in 1901, when he published his 'Manual of the Birds of Iceland.' The author informs us that he has every intention of visiting the country again, and does not wish the present account to be considered final, as the material for such a work is scattered throughout many Museums, and the literature consists to a great extent of papers in periodicals and chapters in books of a general nature. But even as it stands Mr. Hantzsch has accomplished a very useful piece of work and one which will doubtless be for long a standard work on the Birds of Iceland, while his separate lists of the species occurring in Grimsey and the Westmann Islands will be found of the greatest use.

A general survey of the subjects is followed by accounts of the most important literature, of the author's journeys in Iceland, of the character of the country and its characteristic birds, of the changes in the Avifauna within historic times (especially as regards the Great Auk), of the status of various species and of their importance to the natives; while a second part contains a detailed account of each bird, and includes several not recorded before from the country. The native names, the range, and the synonymy are prefixed in every case, while the systematic arrangement is that of Schalow in his 'Vögel der Arktis.'

96. *Herman on Ornithophænology.*

[The Method for Ornithophænology inaugurated by the Hungarian Central Office of Ornithology. By Otto Herman. Budapest, 1905. Pp. 1–13.]

This memoir is both an explanation of the method of investigating the Migration of Birds used by the Hungarian Office, and an appeal to other nationalities to use the same; but the author does not seem to give sufficient weight to the Migration Reports of other countries (such as those for the British Islands and Denmark or the nearer kingdom of Saxony), which he appears to regard as based on "chance occurrences." But we quite agree with him in his wish for great accuracy and for the establishment of a large number of observation-stations. In Hungary the Migration of the Swallow was observed at 5903 stations, and ten maps are given to shew the results. Other birds are to be observed in future, and account is to be taken in "recent" observations (1) of the hypsometrical conditions (with the mean of the earliest and latest arrivals), and (2) of the geographical position of the stations. Cards are to be sent in the first place to "professional ornithologists" to be filled up for all species and to "schooled foresters" for two species. All notices earlier than 1891 are considered "historical." Mr. Herman is, moreover, gathering details of migration from the Knysna to Spitsbergen and Kamtschatka.

97. *Herman on Theories of Bird-Migration.*

[Recensio Critica Automatica of the Doctrine of Bird-Migration. By Otto Herman. Budapest, 1905. Pp. i–ix, 1–74.]

In this pamphlet Mr. Herman, while acknowledging the assistance of many excellent colleagues, asks that further facts may be furnished. He criticises the routes of Migrating Birds suggested by various authors, and pronounces them, in the majority of cases at least, only to exist in the writers' imaginations, for Birds cannot possibly follow all of them. He reviews the "Theses" or Ideas to be found in former literature, beginning from Frederic II.; and gives those of the Hungarian Central Office of Ornithology, as elaborated by himself, Gaston de Gaal, Jacob Hegyfoky, and Jules Pungur: shewing how contradictory many of the views already put forward have been. He rightly lays stress upon three important points: (1) the progress of migration, (2) its connection with meteorology, (3) its causal impulse. He suggests the organisation of an International Committee, to indicate a place of observation, to ensure uniformity, and to prevent such observations being local only.

98. *Journal of the South-African Ornithologists' Union.*

[The Journal of the South-African Ornithologists' Union. Vol. i. No. 1. July 1905.]

We have already recorded the establishment of an Ornithologists' Union in South Africa, and the intention of the Union to start a Journal of their own (see *suprà*, p. 141). The first number of this Journal was issued in July last and is now before us. Besides a Preface, signed by the three editors (Messrs. W. L. Sclater, J. W. B. Gunning, and J. A. Bucknill), it contains an account of the proceedings connected with the formation of the Union, and the inaugural address of the President (Mr. W. L. Sclater) delivered at the Johannesburg meeting in April 1904. This address relates to the work performed by Le Vaillant, Burchell, Sir Andrew Smith, Andersson, Layard, and other leading authorities on South-African Birds.

Besides the Presidential Address, the first number of this Journal contains four other papers, all relating to South-African Birds. Major Sparrow gives us some supplementary notes on the nesting-habits and eggs of certain birds described in Stark and Sclater's new work on South-African Birds; Mr. F. J. Ellemor writes on the nest and eggs of *Coliopasser ardens*; Mr. G. C. Shortridge describes the birds which he met with round Hanover, Cape Colony, and transmitted to the South-African Museum; and Mr. Austin Roberts contributes an account of a visit to a nesting-place of the Sacred Ibis (*Ibis æthiopica*) in the Transvaal near Balmoral, of which he wisely withholds the exact locality. We have then an obituarial notice of Mr. J. v. O. Marais, M.B.O.U., who unfortunately lost his life from blackwater-fever in Northern Rhodesia in February last at the early age of thirty-three. Mr. Marais is stated to have been an "ardent, indefatigable, and capable" ornithologist, and was on a collecting-expedition at the time of his death. He was at one time employed in the Forest Department at Knysna, and was the discoverer of the Bush-Shrike (*Laniarius maraisi*) named after him by Mr. W. L. Sclater ('Ibis,' 1901, p. 183).

99. *Kollibay on the Palæarctic Swifts.*

[Die paläarktischen Apodiden. Von Paul Kollibay. J. f. O., April 1905.]

The discovery by the author of a new "subspecies" of Swift on the Dalmatian Island of Curzola, which has been named *Apus apus kollibayi* by Tschusi zu Schmidhoffen (*cf.* Ornith. Jahrb. xiii. p. 234), has induced him to examine a considerable series of European Swifts in his own collection and in those of his friends and correspondents. In the first place, Herr Kollibay maintains that the pale form of *Cypselus apus* named *C. pallidus* by Shelley (but which Herr Kollibay calls by Brehm's name *murinus*) is a perfectly distinct species, and embraces (as suggested by Hartert) two subspecies—*C. murinus typicus* and *C. m. brehmorum.* In the second place, after studying many specimens from Dalmatia he declares that the separation of *Cypselus kollibayi* as a distinct subspecies of *C. apus* is fully justified. Moreover, after examining the series of Tunisian Swifts in the collection of the late Carlo von Erlanger, he comes to the conclusion that the Tunisian form also belongs to a distinct subspecies, which he names *Apus apus carlo* (!).

100. *Madarász on a new* Bradypterus.

[Ueber eine neue *Bradypterus*-Art. Von Dr. Julius v. Madarász. Ann. Mus. Nat. Hung. iii. p. 113 (1905).]

The National Museum of Hungary has received, in a collection transmitted by Koloman Katona from Kiboscho, in German East Africa, an example of a new species of *Bradypterus*, which is described under the name *B. mariæ*. It is most nearly allied to *B. alfredi* Hartl. and *B. barratti* Sharpe.

101. *Mearns on new Philippine Birds.*

[Descriptions of Eight new Philippine Birds, with Notes on other Species new to the Islands. By Edgar A. Mearns. Proc. Biol. Soc. Washington, xviii. p. 83 (1905).]

The new species described are *Turnix suluensis* from Sulu, *Muscadivora langhornei* from Basilan, *Caprimulgus affinis mindanensis* from Mindanao, *Phyllergates heterolæmus* from Mt. Apo, Mindanao, *Cephalophoneus suluensis* from Sulu, *Hyloterpe apoensis* from Mt. Apo, *Dicæum davao* from Mindanao, and *Lamprocorax todayensis* from Mt. Apo. The generic term *Leonardia* Mearns (Pr. B. S. W. xviii. p. 1), being preoccupied, a change to *Leonardina* is proposed.

A list of recent additions to the Philippine Avifauna is added.

102. *Nelson on Names of certain North-American Birds.*

[Notes on the Names of certain North-American Birds. By E. W. Nelson. Proc. Biol. Soc. Washington, xviii. p. 121 (1905).]

Mr. Nelson wishes to alter the names of certain well-known species of North-American Birds, but we see no reason for following his lead. In some of the cases discussed it is quite a matter of opinion whether the obsolete names which he has disturbed from oblivion are certainly applicable to the species to which he refers them. It may be "evident" to him that "*Tangavius involucratus*" "applies to a form of *Callothrus*." It is not so to us, and the type is non-existent and cannot be referred to in order to settle the question definitely. In the case of *Cathartes aura* the facts stated are of interest, especially as to the results of the examination of *Cathartes burrovianus*. But in his ardour for "unlimited priority" Mr. Nelson refuses to consider the inconvenience of altering the long-established name of such a well-known bird as *Cathartes aura*. We cannot agree with him, and believe that he will find few to follow his example.

103. *Nelson on a new Mexican Goatsucker.*

[Description of a new Species of Whip-poor-will. By E. W. Nelson. Proc. Biol. Soc. Washington, xviii. p. 111 (1905).]

This "strongly-marked species," now named *Antrostomus notabilis*, is the same as the bird called *Antrostomus macromystax* in Baird, Brewer, and Ridgway's 'Birds of North America' (ii. p. 400), but incorrectly so, according to Mr. Nelson. The type from Tamaulipas, Mexico (*Sennett*), is in the American Museum of Natural History.

104. *Oates and Reid on the Birds' Eggs in the British Museum.*

[Catalogue of the Collection of Birds' Eggs in the British Museum (Natural History). Vol. IV. Carinatæ (Passeriformes continued). By Eugene W. Oates, assisted by Capt. Savile G. Reid. London. Printed by Order of the Trustees. 1905. 352 pp.; xiv. coloured plates.]

In the fourth volume of the Catalogue of the Birds' Eggs in the National Collection the enumeration and description of the eggs of the Oscinine Passeres is continued. The Families treated of are the same as those in the fourth volume of the 'Hand-list,' the nomenclature and arrangement of which are closely followed.

Altogether 17 Families containing 620 Species are treated in this volume. The specimens of eggs number 14,917. A description is given of the general characters of the eggs of every species and their measurements are added. After this the exact locality of each batch of eggs and the authority is stated, the number of eggs in each batch being also added. But no description of the mode of nesting or of the nest itself is given, although in many cases these must be well known. Such particulars might certainly have been stated under each generic head, and would have much increased the value of the 'Catalogue.'

Fourteen coloured plates are attached to the fourth volume of the 'Catalogue,' and are, no doubt, correctly drawn and coloured. About twenty eggs are figured on each plate, many of which are of great beauty and entire novelty. But as we turn them over and admire them we are seized with the desire to know what bird has laid such a curious egg as that (for example) which is figured on plate iii. fig. 11. On referring to the "Explanation of the Plates" we are told that plate iii. fig. 11 represents the egg of *Eupetes loriæ*. But in order to find the reference to this species in the 'Catalogue' we must again make a search in the General Index, for the page in which the description of the egg is to be found is not stated in the "Explanation of the Plates." This is an omission which it would have been easy to supply, and which causes the enquiring "oologist" much trouble.

We also venture to think that it would have been better to have arranged the eggs of the birds of the same genus together on the same plate, so as to facilitate comparison between them, and not to place them far from each other, as is done in some cases (see eggs of *Turdus*, *Locustella*, *Aëdon*, and *Tephrodornis*).

105. *Owston on the Birds of Japan.*

[List of Japanese Birds and Eggs. By Allan Owston. Yokohama, Japan, 1904.]

This is a sale-list of Japanese Birds and Eggs, containing the names of 459 species. The prices seem to be very moderate. There are several species mentioned that we are not acquainted with—e. g. *Parus owstoni* Ijima, and others of Bangs and Stejneger.

106. *Parrot on the* Cyanopica *of Japan.*

[*Cyanopica cyanus japonica*, nov. subsp. Von Dr. Parrot. Orn. Monatsb. 1905.]

The form of *Cyanopica cyanus* found in Japan (Nippon, 1901) is separated as a new subspecies, *C. c. japonica*.

107. *Sarudny and Loudon on Two new Persian Birds.*

[Vorläufige Beschreibung zweier ornithologischen Neuheiten aus West-Persien. Von N. Sarudny und Harald, Baron Loudon. Orn. Mon. 1905, p. 76.]

A subspecies of *Pœcile lugubris* from the mountains of

Ghilan is described as *P. l. hyrcanus*, and the Rock-Nuthatch of the central part of the Persian plateau is separated as *Sitta syriaca obscura*.

108. *Schioler on the Wild Duck of Greenland.*

[Om den grönlandske Stokand, *Anas boschas spilogaster*. Af E. Lehn Schioler. Vid. Middel. Kbhvn. 1905.]

The Wild Duck of Greenland has hitherto been referred to the typical *Anas boscas*, but the author, after comparison of a full series of specimens of it with examples of the Wild Duck from Denmark and other countries, comes to the conclusion that it ought to be regarded as a different subspecies, which he proposes to call *Anas boschas spilogaster*, with the following characters:—"Quam forma typica major, rostro paulo breviore. Mas, habitu nuptiali dorso pallidiore, pectore nigro notato. Femina et avis junior colore cinereo."

Three photographic plates illustrate this paper.

109. *Sclater (W. L.) on Nature-Study for South Africa.*

[Nature-Study for South Africa. By W. L. Sclater. Rep. S. Afr. Assoc. Adv. Sci., Johannesburg Meeting, 1904.]

Mr. Sclater has been commending "Nature-Study" to the South Africans—the more so that he has been much struck by the lack of recorded observations on the Mammals and Birds of South Africa during the preparation of his series of hand-books. If a course of Nature-Study were introduced into the schools he hopes that some of the pupils would not only become lovers of Nature, but would be able and willing to assist in furthering the scanty knowledge of the creatures living around them that now prevails. Mr. Sclater gives as instance the ignorance of the dates of the arrival and departure in South Africa of the Common Swallow and other familiar European birds that visit the Colony on migration. Very few, and not always satisfactory, observations have as yet been recorded on this interesting subject, which requires little scientific knowledge, but only patience and accuracy.

110. *Shelley's 'Birds of Africa.'*

[The Birds of Africa, comprising all the Species which occur in the Ethiopian Region. By G. E. Shelley, F.Z.S., F.R.G.S., &c. Vol. IV. pt. 2. London: Porter. 1905.]

This half-volume is devoted entirely to typical Weaver-birds, Ploceinæ, the third and last Subfamily of the numerous and important African Family Ploceidæ. Capt. Shelley recognises 124 species of these birds and divides them into 25 genera.

The account of these species seems to comprise all that is known of them, and the "keys" to the species given under every generic head afford great facilities for their recognition. The text is illustrated by seven well-drawn and beautifully coloured plates, which represent the following species:—*Amblyospiza capitalba*, *Histurgops ruficauda*, *Ploceipasser pectoralis*, *Anaplectes blundelli*, *A. erythrogenys*, *Cinnamopteryx tricolor*, *Sycobrotus stictifrons*, *Sitagra aliena*, *Hyphantornis nigriceps*, *H. spekii*, *Xanthophilus temporalis*, *H. nyasæ*, *X. holoxanthus*, and *X. princeps*.

111. *Thayer and Bangs on the Birds of Gorgona Island.*

[The Vertebrata of Gorgona Island, Colombia. Aves, by John E. Thayer and Outram Bangs. Bull. Mus. Comp. Zool. vol. xlvi. No. 5 (1905).]

Gorgona is a small island in the Bay of Panama about twenty miles off Punta los Reyes, the nearest point of the Colombian coast. It is completely covered by a dense tropical forest, without trails or open places. The only naturalists that are known to have visited the island are Capt. Kellett and Lieut. Wood, who stopped there many years ago on their way to the Galapagos, and procured a specimen of a Tanager (*Tachyphonus delattrii*) which is now in the British Museum (see Sclater Cat. B. B. M. xi. p. 215).

In February 1904 Mr. John E. Thayer "equipped and put into the field" the well-known zoological collector Mr. Wilmot Brown, who, among other places in this district, visited Gorgona Island and remained two weeks there, but only obtained or recognised examples of 16 kinds of birds, the island being apparently very poor in individuals as well as in species of this Class.

The authors now give us an account of these birds, and describe as new *Sula etesiaca* (allied to *S. leucogastra*), *Urubitinga subtilis*, *Thamnophilus gorgonæ*, *Cyanerpes gigas*, and *Cæreba gorgonæ*.

What the Humming-bird called by the authors "*Amizilis tzacatl*" may be it is difficult to say. Those who revive and employ these obsolete and remarkable terms should, at any rate, add the generally used name of the species for the information of their less-learned brethren.

112. *Tschusi zu Schmidhoffen on the Ornithological Literature of the Austrian Empire.*

Ornithologische Literatur Osterreich-Ungarns und des Occupationgebietes, 1903. Von Victor Ritter v. Tschusi zu Schmidhoffen. Verh. zool.-bot. Ges. zu Wien, 1905.]

This useful list, now apparently established as an annual publication, gives a complete alphabetical catalogue of the titles of the books and papers relating to Ornithology published in Austria-Hungary and the Occupied Provinces during 1903. As many of these papers are written in the Hungarian, Czech, Croatian, and Slovenian languages, it is very convenient to have an understandable translation of their titles in German.

113. '*Verhandlungen*' *of the Ornithological Society of Bavaria.*

Verhandlungen der ornithologischen Gesellschaft in Bayern (fortsetzung der Jahresberichte der ornithologischen Vereins München). Band IV. In Auftrage der Gesellschaft herausgegeben von Dr. med. C. Parrot. 8vo. Münche, 1904. 184 pp.]

The former "Ornithologische Verein München" has now changed its name to the "Ornithologische, Gesellschaft in Bayern," and, as will be remarked, has also slightly altered the title of its periodical organ. The fourth volume of the old 'Jahresberichte' is, therefore, become the first of the present 'Verhandlungen.' The volume contains, besides the proceedings of the Society for 1903 and a list of its members, several original contributions to our knowledge of Bavarian Ornithology, which will be of interest to students of Palæarctic Bird-life. Our active friend Dr. Carl Parrot, of Munich, the President of the Society, is also the editor of its periodical.

XLII.—*Obituary.*

WILLIAM THOMAS BLANFORD, C.I.E., LL.D., F.R.S., and Lieut. SUTTON AYLMER DAVIES.

It is my sad task to chronicle the death of one of our most talented members, one who became a Fellow of the British Ornithologists' Union in 1873, and whose well-known face and figure have been seen for many years taking an active part at all scientific gatherings. He passed away on the 23rd of June last, at the age of 72, at his residence in Bedford Gardens, Campden Hill. Although for some time his friends had noticed his failing strength, the news of his death came as an unexpected shock to many. Science has lost in William Blanford one of its most profound thinkers, and the Societies to which he belonged mourn for a Fellow who early in his career began to enrich the pages of their Journals.

The list of the works and papers contributed by Dr. Blanford reaches nearly 180. The product of some years is surprising, not only for the number of papers that were written, but for the wide range of subjects which they cover in Geology, Geography, and Zoology; and in this last are comprised papers on Mammals, Reptiles, Birds, and Mollusca: all excellent of their kind. Space does not admit of the record of his long service when employed on the Geological Survey of India, to which he was appointed in 1855—this will be alluded to in other obituary notices, as it has been in 'Nature'; neither need I touch on his early life and education, and the honours he gained, for the details of these will be found in an excellent account by

Dr. Henry Woodward, published in the 'Geological Magazine,' Jan. 1905 ("Eminent living Geologists").

Blanford's knowledge of zoology, combined with his extensive acquaintance with the physical features and geology of a large area in Europe and Asia, render all his writings of peculiar value and interest. His work in the field had taken him over the greater part of Peninsular India, Burma, the Eastern Himalaya (Sikhim), as well as Scinde and, still farther afield, Persia and Abyssinia; thus physical geography and the distribution of life in the past and in the present enter largely into the papers contributed by him, and suggest so much for others to work out.

Few men of his time were better qualified to deal with the zoological subdivisions of the Oriental Region and fix their bounds. His paper on "The Distribution of Vertebrate Animals in India, Ceylon, and Burma"* is a monument of careful and laborious research, indicating how certain geological changes in elevation of the land with others of temperature within the region have affected that distribution.

With regard to the special work of this Union:—The birds of the different zoological divisions are well worked out, for in ornithology Blanford did some excellent work, as some 30 of his papers testify, to which must be added the descriptive catalogues to be found in his books on the 'Geology and Zoology of Abyssinia (1867-68)'; and 'Eastern Persia: Journeys of the Persian Boundary Commission (1870-72).' His knowledge of the birds of the Eastern Himalaya was the outcome of a tour made in Sikhim, accompanied by Captain H. J. Elwes, of which a very interesting account is to be found in the pages of the 'Journal Asiatic Soc. of Bengal' (1871). On this trip, the first scientific exploration of Sikhim since that of Sir Joseph Hooker, Blanford collected largely, principally Birds and the Land-Mollusca, while those of his colleague were no less valuable.

Since his retirement from the Indian Service in 1882, his time may be said to have been devoted to the advancement of science, serving on the Councils of the Royal Society, the Geological, Geographical, Zoological, &c., and taking part in the discussion of papers or the delivery of his own Presidential Addresses. The Government of India often sought his advice, and entrusted to him the Editorship of a series of volumes on the Fauna of India, of which seventeen have been published—the whole of the Vertebrata, and others on the Insecta and Arachnida. Out of the four volumes on the Birds of India, two were contributed by Dr. Blanford. His last work for this series, on which he was engaged up to within a few days of his death, was 'The Land-Mollusca'—perhaps one of his most favourite studies. I believe I am right in saying the land and freshwater shells were the first to attract his attention and to be collected by him after his arrival in India, and they were the last to which his thoughts were directed.

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* Phil. Trans. Royal Soc. of London, 1901.

It has been the writer's good fortune to have seen very much of the Member we have lost, for our correspondence extended over nearly 40 years both in India and in this country. With subjects and interests in common, I thankfully acknowledge that my friend certainly to a great extent directed my Natural History work, and my formation of a collection of the Indian Land-Mollusca and serious study of the subject were very much due to association with both Henry and William Blanford. It added not a little for many years to an enjoyment of life in the jungle, when carrying on survey-operations in India. Blanford took an interest in every worker and collector he came across, and inasmuch as he was always ready to help with his advice and experience, all must have felt the charm of his society.

Besides being a naturalist he was a keen sportsman, the one often makes the other—with gun or rod in hand no one enjoyed his day more. It is only in the life spent in camp, with its curious contrasts of pleasure and discomfort, in the hours of walking through the stubbles or standing by the covert side, that one really gets to know all that there is of good in a friend's nature. William Blanford could enter into such pleasures, and his knowledge of Nature had been increased thereby; he will be missed not only as a man of science, as a fellow-worker, but as a friend by many members of the British Ornithologists' Union.—H. H. G.-A.

Papers by Dr. Blanford.

Letter on various rare Indian Birds. Ibis, 1867, p. 461.

On a new Species of *Callene* (*C. albiventris*) from the Pulney Hills in Southern India. P. Z. S. 1867, p. 832.

Descriptions of Five Birds and a Hare from Abyssinia. Ann. & Mag. N. H. (4) iv. p. 329 (1869).

Ornithological Notes, chiefly on some Birds of Central, Western, and Southern India. Journ. Asiat. Soc. Bengal, xxxviii. pt. 2, p. 164 (1869).

List of Birds obtained in the Irawadi Valley around Ava, Thayet Myo, and Bassein. Ibis, 1870, p. 462.

List of Birds collected or observed in the Wardha Valley and its Vicinity, near Chánda. Journ. Asiat. Soc. Bengal, xl. pt. 2, p. 268 (1871).

Notes on Three new Birds from Sikkim (*Phylloscopus pallidipes*, *Pellorneum mandellii*, and *Propasser saturatus*). Proc. Asiat. Soc. Bengal, 1871, p. 215.

Description of a new Himalayan Finch, *Procarduelis rubescens*. P. Z. S. 1871, p. 693.

Notes on a Collection of Birds from Sikkim. Journ. Asiat. Soc. Bengal, xli. pt. 2, p. 152 (1872).

Descriptions of new Species of *Nectarinia*, *Sitta*, and *Parus* from Persia and Baluchistan. Ibis, 1873, p. 86.

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SUTTON AYLMER DAVIES, Lieutenant in the East Lancashire Regiment, was a promising young naturalist who joined the B. O. U. in 1899. It will be remembered that he accompanied Mr. John Stares to Lapland last year, and an account of their trip appeared in 'The Ibis' for January. Amongst other successes, they found the nest and eggs of the Dusky Redshank. His untimely death by the capsizing of a boat on the Kuadakwasla Lake, near Poona, in May last, is to be much regretted.

XLIII.—*Letters, Extracts, and Notes.*

WE have received the following letters addressed to "The Editors of 'The Ibis'":—

SIRS,—At a meeting of the B. O. Club held on March 15th of this year, I had the pleasure of exhibiting an adult male example of the Snow-Finch (*Montifringilla nivalis*) which had been shot at Rye Harbour, Sussex, on February 22nd. On the day previous, while shooting at Rye, I saw this bird amongst a large flock of Skylarks; but, owing to its excessive shynesss, I was unable to secure it. The next day, however, the bird was shot and sent to Mr. Bristow, of St. Leonard's, for preservation, and I had the good fortune to examine it in the flesh.

When seen alive this bird appeared to me to be not unlike a Snow-Bunting, but the flight was much less buoyant than that of the latter species. The occurrence of this bird, new to the British list, is of interest, as it is a bird which is said to have no proper migrations, but merely descends from the highest mountain-ranges of Europe to the lower-lying districts in winter. The same, however, has been believed of the Water-Pipit, but the latter is undoubtedly a regular visitor to England on migration, both in autumn and spring; and, during the week in which the Snow-Finch was shot, I saw several unmistakable Water-Pipits on the salt-marshes near Rye. This is somewhat noteworthy, as I believe the nesting-stations of these two species overlap.

A strong north-easterly gale had been blowing for three days, accompanied by heavy hailstorms.

The Snow-Finch has twice been reported from Heligoland, the first occurrence being on March 30th, 1849, and on one other occasion in autumn it was seen, but not obtained (*Gätke*). The bird obtained at Rye is, I believe, in the possession of the man who shot it.

Yours &c.,

MICHAEL J. NICOLL.

10 Charles Road, St. Leonard's-on-Sea,
25th July, 1905.

SIRS,—Will you kindly make known by a short paragraph in 'The Ibis' that I shall be pleased to forward a copy of my reprint of "Vroeg's Adumbratiuncula, 1764," so far as my separates will allow, to any ornithologist who cares to send me his address?

Yours truly,
C. DAVIES SHERBORN.

49 Peterborough Road, Fulham,
London, S.W.,
16th August, 1905.

SIRS,—With the assistance of an intelligent and reliable keeper, and from my own notes and recollection, I am able to give the following instance of the procreative instinct of the Great Crested Grebe, *Podicipes cristatus* (Linnæus):—

Last year (1904) a pair of Great Crested Grebes nested on a sheet of water in this neighbourhood and a clutch of eggs was produced. These eggs, upon which the female was sitting, disappeared—by what means was not discovered, but it was not considered to be by human agency. Shortly afterwards the female laid an egg on another nest, which was deserted, and the egg vanished. On May 1st the same year I saw the female sitting on a clutch of eggs on the third nest of the season. A heavy gale the following day blew away this nest and the eggs, and on May 19th the same year I observed the female sitting on eggs on another (the fourth) nest, from which a brood ultimately resulted. The pair of birds in question were the only Great Crested Grebes on the water last year until about May 12th, when they were joined by another pair; and the one pair were the owners of all four nests.

My own experience was that if the first clutch of eggs of this Grebe are destroyed or taken a second nest is soon afterwards constructed and other eggs laid; but I was not aware that four nests, each containing an egg or eggs, would, under any circumstances, be produced in one season by this bird—a one-brooded species.

On April 16th this year (1905) I inspected a Great Crested Grebe's nest, on the same sheet of water, which contained five eggs in an advanced state of incubation, and they very soon afterwards hatched out.

There were *two* pairs of Great Crested Grebes on the above-mentioned sheet of water in the spring of this year (1905), each of which pairs bred at that season, and I saw one of the nests on April 16th. It contained five eggs in an advanced state of incubation. They were embedded in dead weed in such manner as to lead me to the opinion that the covering had not been so recently applied as when the female left the nest on being approached, and that, coupled with other experiences, the eggs of this species remain covered during incubation. Three chicks resulted from this clutch, which were all brought up, after which the parent-birds nested again, and on August 24th I saw one of them accompanied by a young bird about a quarter-grown—the representative of a second brood of the year.

I am, Sirs, yours &c.,
High Ackworth, Pontefract, WALTER B. ARUNDEL.
26th August, 1905.

Report of the South African Museum.—In the 'Report of the South African Museum' for 1904, which has been recently presented to the Parliament of Cape Colony, the Trustees give a generally favourable account of the progress of their Institution, though they "regret to state that, owing to the restrictions of expenditure necessitated by the financial depression, it has not been possible to proceed with the contemplated additional wing to the Museum." But a new room, to be devoted to the exhibition of Insects, has been furnished and will shortly be opened. The specimens of birds added to the Museum in 1904, as we are told by Mr. W. L. Sclater, the Director, were 473 in number, of which 33 were of species new to the Collection. Amongst them was a series of 176 skins from the vicinity of Zumbo on the Zambesi, a district as yet comparatively little worked, presented by Dr. Stoehr * of the Geodetic Survey.

In conjunction with the Tring Museum, the Director obtained permission to send an Italian Collector and Naturalist,

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* Dr. Stoehr's name was erroneously given as "Stocher" in the 'Bulletin' of the B. O. C. (xv. p. 68), in reference to the specimen of *Eutolmaetus spilogaster* which he sent to the South African Museum from this district.

Signor Peter Bonomi, in H.M.S. 'Odin' (Commander Pearce) on a visit to Tristan da Cunha in January last. Signor Bonomi reached his destination on January 23rd, and remained there until February 4th, when, after a short visit to Inaccessible and Nightingale Islands (see Map, above, p. 248), he returned to Capetown. He brought back a good collection of birds representing 12 species, which have been divided between the Tring and the Cape Collections. These were mostly marine forms, but there are amongst them examples of both the two peculiar land-birds (*Nesocichla eremita* and *Nesospiza acunhæ*) which are known to occur in Tristan da Cunha.

The American Museum of Natural History.—We learn from 'The Museum's Journal' (vol. iv. p. 132) that two large and fine mounted groups of birds have lately been placed on exhibition at the American Museum of Natural History, New York. One of them is a group of Flamingoes from the Bahamas, the other a series of Water-birds from the San Joaquin Valley, California. The groups are twenty feet in length, and have been nearly two years in progress of construction. The Flamingoes, among which every stage of this bird from the egg to the adult is represented, were collected by Mr. Frank M. Chapman (see above, p. 272), while the background, which represents the breeding-ground with nests and eggs, is the work of Mr. L. A. Fuerter. This group fairly blazes with colour, which is enhanced by the flock of birds flying overhead. The background for the group from the San Joaquin Valley was painted by Mittell, a Californian artist, and is a picture in itself. The birds here consist of a flock of Black Terns, as well as Ducks, Avocets, and other marsh-loving species.

Western China.—In the 'Field' of July 16th will be found an interesting article (by E. H. Wilson) on the opportunities for new discoveries in the mountainous district of Western China on the borders of Tibet, between 99°–104° E. long., and 26°–34° N. lat., where magnificent forests rise to an elevation of 13,000 feet. Besides the well-known explorer, the late Père David, this country has been visited, for scientific purposes, only by Berezowski (who accompanied Potamin, as zoologist, during his expeditions into the borders of Szechuen and Kansu) and the entomologist Mr. A. E. Pratt, who formed a small collection of birds (see Seebohm, 'Ibis,' 1891, p. 370). But much more remains to be done in this attractive region, where splendid Phasianidæ abound. The route, by steamer up the Yang-tze to Ichang, is quite easy, and the country is very healthy, while the large mammals on the mountains supply sport and food. Some of our younger brethren would do well to transfer their attentions from Africa to this little-known part of Asia.

A Visit to Dr. Krueper.—In a recently published article upon his ornithological expedition to the Peloponesus (see Journ. f. Orn., July 1905), Dr. Parrot of Munich (whose acquaintance some of us had the pleasure of making at the last Ornithological Congress) gives the following account of a visit paid to Dr. Krueper at Athens in March 1904:—

"The chief object of my sojourn in the capital city of Greece was a visit to our countryman, Dr. Theodor Krueper, who received me in the kindest way. The following morning we met by appointment in the University Museum, where it was a great enjoyment to me to have its treasures explained by so distinguished an authority. Unfortunately my time was limited, for I had engaged myself to go to the house of Stauros Strimenéas, the taxidermist of the University, in order to examine a collection of birds made by his son in Epirus during the previous autumn. After this I returned to my hotel to prepare for my departure. But Dr. Krueper would not relinquish his purpose of seeing me off, and in spite of his 75 years busied himself in assisting me so much that I feared that the exertion would do him harm. May the highly-esteemed explorer retain his extraordinary activity many years longer. That is the wish of all his old friends at home."

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1905.

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155 1891. Haigh, George Henry Caton; Grainsby Hall, Great Grimsby, Lincolnshire.

1887. Haines, John Pleydell Wilton; 17 King Street, Gloucester.

1898. Hale, The Rev. James Rashleigh, M.A.; The Vicarage, Horton Kirby, Dartford, Kent.

1905. Hamerton, Capt. Albert Edward, R.A.M.C., D.S.O.; Ferozepur, Punjab, India.

1904. Harington, Capt. Herbert Hastings; 92nd Punjabis, Bhamo, Upper Burma.

160 1900. Harper, Edmund William, F.Z.S.; 45 Water Street, Georgetown, Demerara, British Guiana.

1900. Harris, Henry Edward; 301 St. James's Court, Buckingham Gate, S.W.

1893. Hartert, Ernst J. O., Ph.D.; The Zoological Museum, Tring, Herts.

1868. Harting, James Edmund, F.L.S., F.Z.S.; Edgewood, Weybridge, Surrey.

1896. Hartland, John Cole; c/o Messrs. Hunt & Co., P.O. Box 11, Yokohama, Japan.

165 1893. Hartmann, William; Milburn, Esher, Surrey.

1899. Harvey, Capt. Robert Napier, R.E.; Stanhope Lines, Aldershot.

1873. Harvie-Brown, John A., F.R.S.E., F.Z.S.; Dunipace House, Larbert, N.B.

1900. Hasluck, Percy Pedley Harford; The Wilderness, Southgate, N.

1902. Hatfeild, John Randall; Edlington Hall, Horncastle, Lincolnshire.

170 1898. Hawker, Richard M., F.Z.S.; Bath Club, Dover Street, W.; and c/o Messrs. Dalgety & Co., 96 Bishopsgate Street Within, E.C.

1905. Hawkshaw, John Clarke, M.A., M.I.C.E., F.Z.S., F.G.S.; Hollycombe, Liphook, Hants; and 33 Great George Street, Westminster, S.W.

1905. Headley, Ferderick Webb, F.Z.S.; Haileybury College, Herts.

1887. Hebbert, Charles T., F.Z.S.; The Rhodrons, Hook, Kingston-on-Thames.

1905. Hellmayr, Carl E.; Zoological Museum, Tring, Herts.

175 1902. Herbert, Bron; Picket Post, Ringwood, Hants.

Date of
Election.

1902. Hett, Geoffrey Seccombe.

1899. Heywood, Richard; Narside, Narborough, Swaffham, Norfolk.

1900. Hills, John Waller; 14 Victoria Grove, Kensington, W.; and Corby Castle, Carlisle.

1884. Holdsworth, Charles James; Sunnyside, Wilmslow, Cheshire.

180 1877. Holdsworth, Edmund W. H., F.Z.S.; South Town, Dartmouth, Devon.

1905. Hopkinson, Emilius, M.B., D.S.O., F.Z.S.; 45 Sussex Square, Brighton; and Bathurst, Gambia, West Africa.

1904. Horsbrugh, Capt. Boyd Robert, Army Service Corps, Naval Hill, Bloemfontein, O.R.C., South Africa.

1888. Horsfield, Herbert Knight; Crescent Hill, Filey, Yorks.

1893. Hose, Charles, D.Sc., F.Z.S.; Baram, Sarawak, Borneo.

185 1895. Howard, Henry Eliot, F.Z.S.; Clarelands, near Stourport.

1881. Howard, Robert James; Shearbank, Blackburn, Lancashire.

* 1858. Hudleston, Wilfrid Hudleston, M.A., F.R.S., F.Z.S.; 8 Stanhope Gardens, S.W.

1893. Hudson, William Henry, F.Z.S.; Tower House, St. Luke's Road, Westbourne Park, W.

1869. Hume, Allan Octavian, C.B., C.S.I., F.Z.S.; The Chalet, Kingswood Road, Upper Norwood, S.E.

190 1890. Hunter, Henry Charles Vicars, F.Z.S.; Mawley Hall, Cleobury Mortimer, Salop.

1901. Ingram, Collingwood; Stoke Golding, Nuneaton; and c/o Lady Ingram, 65 Cromwell Road, S.W.

1902. Innes Bey, Dr. Walter Francis; Curator of the Zoological Museum, School of Medicine, Cairo, Egypt.

1888. Jackson, Frederick J., C.B., C.M.G., F.Z.S., F.L.S.; Uganda, British East Africa; The Red House, Aldeburgh, Suffolk.

1892. James, Henry Ashworth, F.Z.S.; Hurstmonceux Place, Hailsham, Sussex.

195 1896. Jesse, William, F.Z.S.; Meerut College, Meerut, India.

1889. Johnson, Frederick Ponsonby, B.A., J.P., D.L.; Castlesteads, Brampton, Cumberland.

1891. Johnston, Sir Harry Hamilton, G.C.M.G., K.C.B., F.Z.S.; 27 Chester Terrace, Regent's Park, N.W.

Date of
Election.

1905. Johnstone, Edwin James, F.Z.S.; Junior Carlton Club, Pall Mall, S.W.

1900. Jones, Major Henry, F.Z.S. (late 62nd Regt.); East Wickham House, Welling, Kent.

200 1899. Jourdain, The Rev. Francis Charles Robert, M.A.: Clifton Vicarage, near Ashbourne, Derbyshire.

1902. Joy, Norman Humbert, M.R.C.S., L.R.C.P.; Bradfield, near Reading.

1880. Kelham, Col. Henry Robert, C.B. (late Highland Light Infantry); 52 Tisbury Road, Hove, Brighton.

1894. Kelsall, Major Harry Joseph, R.G.A.; Hongkong.

1897. Kelsall, The Rev. John Edward, M.A.; Milton Rectory, Lymington, Hants.

205 1904. Kelso, John Edward Harry, M.B.; San Remo, 12 Festing Road, Southsea, Hants.

1891. Kerr, J. Graham, F.Z.S., Regius Professor of Zoology, The University, Glasgow.

1895. Kingsford, William Edward; Cairo, Egypt.

1902. Kinnear, Norman Boyd; 12 Grosvenor Crescent, Edinburgh.

1882. Knubley, The Rev. Edw. Ponsonby, M.A.: Steeple Ashton Vicarage, Trowbridge.

210 1900. Koenig, Dr. Alexander Ferdinand; Coblenzer-Strasse 164, Bonn, Germany.

1892. Laidlaw, Thomas Geddes; Bank of Scotland, Perth.

1884. Langton, Herbert; 11 Marlborough Place, Brighton.

1881. Lascelles, The Hon. Gerald, F.Z.S.: The King's House, Lyndhurst.

1892. La Touche, John David Digues, C.M.Z.S.; 7 Springfield Crescent, St. Helier, Jersey.

215 1898. Learoyd, A. Ernest; Rawthorpe Hall, Huddersfield.

1905. Legge, The Hon. Gerald; 10 Charles Street, Berkeley Square, W.

1905. Leigh, Henry Boughton; Brownsover Hall, Rugby.

1898. Le Souef, Dudley, C.M.Z.S.; Director of the Zoological Gardens, Melbourne, Victoria, Australia.

1868. Le Strange, Hamon, F.Z.S.; Hunstanton Hall, King's Lynn, Norfolk.

220 1903. Lethbridge, Ambrose Yarburgh; Dudmaston Hall, Bridgnorth, Salop; and Guards' Club, Pall Mall, S.W.

Date of Election.

1905. Leverkuhn, Hofrath Paul, M.D., C.M.Z.S. (Director of the Scientific Institutions and Library of H.R.H. the Prince of Bulgaria); The Palace, Sofia, Bulgaria.

1893. Lewis, Frederick; Assistant Conservator of Forests, The Kachchin, Colombo, Ceylon.

1889. Leyland, Christopher John, F.Z.S.; Haggerston Castle, Beal, Northumberland.

1897. Lilford, John, Lord, F.Z.S.; Lilford Hall, Oundle, Northants.

225 1898. Loat, William Leonard S., F.Z.S.; Cumnor Place, near Oxford.

1897. Lodge, George Edward, F.Z.S.; 5 Thurloe Studios, Thurloe Square, S.W.

1905. Lovat, Simon Joseph, Lord, C.B., C.V.O., D.S.O., F.Z.S.; Beaufort Castle, Beauly, Inverness-shire.

1904. Lowe, Dr. Percy R.; c/o Sir Frederic Johnstone, Bt., The Hatch, Windsor.

1889. Loyd, Lt.-Col. Arthur Purvis, F.Z.S. (late 21st Hussars); c/o Capt. Loyd, The Old House, Wimborne, Dorset.

230 1877. Lumsden, James, F.Z.S.; Arden House, Arden, Dumbartonshire, N.B.

1904. Lynes, Lieut. Hubert, R.N.; H.M.S. 'Venus,' Mediterranean Fleet.

1900. McConnell, Frederick Vavasour; 37 Cranley Gardens, South Kensington, S.W.

1904. Macdonald, Kenneth Campbell; Burma Police, Rangoon, Burma.

1905. McGregor, Peter James Colquhoun; H.B.M. Consul, Sarajevo, Bosnia, Austria.

235 1897. McLean, John Chambers; Te Karaka, Gisborne, New Zealand.

1899. Macmillan, George Augustin; 19 Earl's Terrace, Kensington, W.

1894. Macpherson, Arthur Holte, F.Z.S.; 51 Gloucester Terrace, Hyde Park, W.

1904. Mapleton, Harvey William, B.A.; Bracknell Cottage, Hartley Wintney, Winchfield, Hants: and Badgworth, Axbridge, Somerset.

1894. Marshall, Archibald McLean; Bleaton Hallet, Blairgowrie, N.B.

240 1894. Marshall, James McLean: Bleaton Hallet, Blairgowrie, N.B.

Date of Election.

1901. Martin, Rev. William Keble, M.A.; Waverley Avenue, Beeston, Notts.

1897. Mason, Col. Edward Snow; 20 Minster Yard, Lincoln.

1898. Massey, Herbert; Ivy Lea, Burnage, Didsbury, Manchester.

1896. Maxwell, Rt. Hon. Sir Herbert E., Bt., P.C., M.P., F.R.S.; 49 Lennox Gardens, S.W.

245 1883. Meade-Waldo, Edmund Gustavus Bloomfield, F.Z.S.; Stonewall Park, Edenbridge, Kent.

1899. Meinertzhagen, Capt. Richard, F.Z.S.; 3rd King's African Rifles, Nairobi, British East Africa; Brookwood Park, Alresford, Hants.

1900. Metcalfe, Geoffrey Bryan Theophilus; Roche Court, Salisbury.

1905. Middlemore, Thomas; Melsetter, Orkney.

1886. Millais, John Guille, F.Z.S.; Comptons Brow, Horsham.

250 1903. Mills, The Rev. Henry Holroyd, F.Z.S.; Treslothan Vicarage, Camborne, Cornwall.

1879. Mitchell, Frederick Shaw; Clyderhowe, Edmonton, Alberta, N.W.T., Canada.

1901. Mitchell, P. Chalmers, M.A., D.Sc., F.Z.S.; Secretary to the Zoological Society of London, 3 Hanover Square, W.

1897. Mitchell, William; 5 Bury Street, St. James's, S.W.

1904. Mitchell-Carruthers, Alexander Douglas; Holbrook Rectory, Ipswich.

255 1898. Monro, Horace Cecil, C.B.; Queen Anne's Mansions, Queen Anne's Gate, S.W.

1900. Montagu, Edwin S.; 12 Kensington Palace Gardens, W.

1886. Muirhead, George; Speybank, Fochabers, Co. Moray, N.B.

1893. Mullens, Major William H., M.A., F.Z.S.; 9 St. James's Place, S.W.

1892. Munn, Philip Winchester, F.Z.S.; Laverstoke, Whitchurch, Hants.

260 1897. Munt, Henry, F.Z.S.; 83 Kensington Gardens Square, W.

1900. Musters, John Patricius Chaworth, D.L., J.P.; Annesley Park, Nottingham.

1882. Nelson, Thomas Hudson; The Cliffe, Redcar, Yorkshire.

1895. Nesham, Robert, F.Z.S., F.E.S.; Utrecht House, Queen's Road, Clapham Park, S.W.

Date of Election.

1897. Neumann, Oscar, C.M.Z.S.; 10 Potsdamer Strasse, Berlin, W.

265 1872. Newcome, Francis D'Arcy William Clough; Thurston Lodge, Bury St. Edmunds, Suffolk.

1904. Newman, Thomas Henry, F.Z.S.; Newlands, Harrowdene Road, Wembley, Middlesex.

* 1858. Newton, Alfred, M.A., F.R.S., F.Z.S., Professor of Zoology in the University of Cambridge; Magdalene College, Cambridge.

1886. Nicholls, Howard Hill John, M.R.C.S.; Bramber Lodge, Downview Road, West Worthing.

1902. Nichols, John Bruce, F.Z.S.; Parliament Mansions, Victoria Street, S.W.

270 1900. Nichols, Walter Buchanan; Stour Lodge, Bradfield, Manningtree, Essex.

1876. Nicholson, Francis, F.Z.S.; 84 Major Street, Manchester.

1902. Nicoll, Michael John; 10 Charles Road, St. Leonards.

1904. Noakes, Wickham; Selsdon Park, Croydon.

1895. Noble, Heatley, F.Z.S.; Temple Combe, Henley-on-Thames.

275 1887. Norman, George Cameron, F.Z.S.; Castlecliff, St. Andrews, N.B.

1892. Ogilvie, Fergus Menteith, M.A., F.Z.S.; The Shrubbery, 72 Woodstock Road, Oxford.

1890. Ogilvie-Grant, W. R., F.Z.S.; British Museum (Natural History), Cromwell Road, S.W.

1889. Ogle, Bertram Savile; Hill House, Steeple Aston, Oxford.

1883. Parker, Henry, C.E., F.Z.S.; Whitbourne Lodge, Manby Road, Great Malvern.

280 1879. Parkin, Thomas, M.A., F.Z.S.; Fairseat, High Wickham, Hastings.

1891. Patterson, Robert; Glenbank, Holywood, Co. Down.

1884. Patterson, Sir Robert Lloyd, D.L., F.L.S.; Croft House, Holywood, Co. Down.

1904. Pearse, Theed; Mentmore, Ampthill Road, Bedford.

1894. Pearson, Charles Edward, F.L.S.; Hillcrest, Lowdham, Notts.

285 1891. Pearson, Henry J., F.Z.S.; Bramcote, Notts.

1902. Pease, Sir Alfred Edward, Bt., F.Z.S.; Pinchinthorpe House, Guisborough, Yorkshire; and Barberton, Transvaal, South Africa.

1898. Penn, Eric Frank; Taverham Hall, Norwich.

Date of Election

1891. Penrose, Francis George, M.D., F.Z.S.; Penmenor, Parkstone, Dorset.

1900. Percival, Arthur Blayney, F.Z.S.; Game-Ranger, Nairobi, British East Africa Protectorate; and Somerset Court, Brent Knoll, Somerset.

290 1886. Phillips, E. Lort, F.Z.S.; 79 Cadogan Square, S.W.

1888. Phillips, George Thorne; Wokingham, Berkshire.

1893. Pigott, Thomas Digby, C.B.; 5 Ovington Gardens, S.W.

1893. Pike, Thomas Mayer, M.A.; c/o Mr. Porter, 7 Prince's Street, Cavendish Square, W.

1905. Pollard, Capt. Arthur Erskine St. Vincent (The Border Regiment); Royal Military College, Camberley, Surrey; and Naval and Military Club, Piccadilly, W.

295 1896. Popham, Hugh Leyborne, M.A.; 14 Arlington Street, St. James's, S.W.

1898. Price, Athelstan E.; Broxbourne, Herts.

1903. Proctor, Major Frederick William (late West Riding Regt.); Downfield, Maidenhead.

1901. Proud, John T.; Dellwood, Bishop Auckland.

1893. Pycraft, William Plane, F.Z.S.; British Museum (Natural History), Cromwell Road, S.W.

300 1888. Radclyffe, Charles Robert Eustace; Hyde, Wareham, Dorset.

1903. Ralfe, Pilcher George; The Parade, Castletown, Isle of Man.

1903. Ratcliff, Frederick Rowlinson; 24 Lancaster Gate, W.

1879. Rawson, Herbert Evelyn; Comyn Hill, Ilfracombe.

1894. Read, Richard Henry, L.R.C.P., M.R.C.S.; Church Street, Hanley, Staffordshire.

305 1888. Read, Robert H.; 8*a* South Parade, Bedford Park, W.

1877. Reid, Capt. Savile G. (late R.E.), F.Z.S.; The Elms, Yalding, Maidstone.

1903. Renaut, William E.; 15 Grafton Square, Clapham, S.W.

1895. Rickett, Charles Boughey, F.Z.S.; Upton House, Lostwithiel, Cornwall.

1896. Rippon, Lt.-Col. George, F.Z.S.; 89th Punjabis, Mandalay, Upper Burma.

310 1902. Riviere, Bernard Beryl; 82 Finchley Road, N.W.

1898. Robinson, Herbert C.; Selangor State Museum, Kwala Lumpur, Federated Malay States.

Date of Election.

1896. Rogers, Major J. Middleton, F.Z.S. (late 1st Dragoons); Riverhill, Sevenoaks, Kent.

1893. Rothschild, The Hon. L. Walter, M.P., D.Sc., F.Z.S.; The Museum, Tring, Herts.

1894. Rothschild, The Hon. N. Charles, F.Z.S.; Tring Park, Tring, Herts.

315 1883. St. Quintin, William Herbert, F.Z.S.; Scampston Hall, Rillington, Yorkshire.

1903. Sandeman, Capt. Robert Preston (late 10th Hussars); Dan-y Park, Crickhowell.

1899. Sapsworth, Arnold Duer, F.Z.S.; The Dower House, Ember Court, East Molesey, Surrey; and National Liberal Club, Whitehall Place, S.W.

1902. Sargeaunt, Arthur St. George; 83 Madeley Road, Ealing, W.

1904. Sargent, James; 76 Jermyn Street, S.W.; and 2 Napier Villas, Cambridge Road, Barnes.

320 1870. Saunders, Howard, F.L.S., F.Z.S.; 7 Radnor Place, Hyde Park, W. (*Secretary.*)

1902. Saunders, William Henry Radcliffe, C.E., F.Z.S.; High Bank, Tonbridge, Kent.

1898. Scherren, Henry, F.Z.S.; 9 Cavendish Road, Harringay, N.

1905. Schwann, Harold, F.Z.S.; 4 Prince's Gardens, S.W.

* 1858. Sclater, Philip Lutley, D.Sc., F.R.S., Odiham Priory, Winchfield, Hants; Athenæum Club, London, S.W. (*Joint Editor.*)

325 1891. Sclater, William Lutley, M.A., F.Z.S.; South African Museum, Cape Town, South Africa.

1899. Selous, Frederick Courteney, F.Z.S.; Heatherside, Worplesdon, Surrey.

1889. Senhouse, Humphrey Patricius, B.A.; The Fitz, Cockermouth, Cumberland.

1899. Serle, The Rev. William, M.A., B.D.; The Manse, Duddingston, Edinburgh.

1900. Service, Robert; Maxwelltown, Dumfries.

330 1901. Seth-Smith, David, F.Z.S.; 14 Canning Road, Addiscombe, Croydon.

1904. Seth-Smith, Leslie Moffat, B.A.; Alleyne, Caterham Valley, Surrey.

Date of Election.

1899. Sharman, Frederic, F.Z.S.; 47 Goldington Road, Bedford.

1871. Sharpe, Richard Bowdler, LL.D., F.L.S., F.Z.S.; Assistant Keeper, Zoological Department, British Museum (Natural History), South Kensington, S.W.

1900. Shelford, Robert, M.A., C.M.Z.S., F.E.S.; Hythe, Kent.

335 1870. Shelley, Capt. G. Ernest, F.Z.S. (late Grenadier Guards); 39 Egerton Gardens, South Kensington, S.W.

1865. Shepherd, The Rev. Charles William, M.A., F.Z.S.; Trottiscliffe Rectory, Maidstone, Kent.

1900. Simey, Athelstane Iliff; 17 Finsbury Circus, E.C.

1882. Slater, The Rev. Henry H., M.A., F.Z.S.; Thornhaugh Rectory, Wansford, Northants.

1902. Smith, Abel Henry, M.P.; Woodhall Park, Hertford.

340 1896. Sondes, George Edward, Earl, F.Z.S.; Lees Court, Faversham.

1881. Southwell, Thomas, F.Z.S.; 10 The Crescent, Chapel Field, Norwich.

1903. Sparrow, Major Richard; 7th Dragoon Guards, Canterbury; and Rookwoods, Sible Hedingham, Essex.

1893. Stanley, Samuel S.; Brighton House, New Street, Leamington, Warwickshire.

1900. Stares, John William Chester; Portchester, Hants.

345 1902. Stenhouse, John Hutton, M.B., R.N.; c/o Messrs. Woodhead & Co., 44 Charing Cross, S.W.

1904. Stephen, Julian Thoby; 46 Gordon Square, W.C.

1898. Stirling, William, J.P., D.L.; Ord House, Muir of Ord, N.B.

1893. Stonham, Charles, C.M.G., F.R.C.S., F.Z.S.; 4 Harley Street, Cavendish Square, W.

1881. Studdy, Col. Robert Wright (late Manchester Regiment); Waddeton Court, Brixham, Devon.

350 1887. Styan, Frederick William, F.Z.S.; Ben Craig, Bayham Road, Sevenoaks; and Shanghai, China.

1887. Swinburne, John; Haenertsburg, Transvaal, S. Africa.

1882. Swinhoe, Col. Charles, M.A., F.L.S., F.Z.S.; 42 Campden House Court, Campden Hill, W.

1884. Tait, William Chaster, C.M.Z.S.; Entre Quintas 155, Oporto, Portugal.

1905. Taylor, Lionel E.; Superintendent of Government Nurseries, Irene District, Pretoria, Transvaal.

Date of Election.

355 1873. Tegetmeier, William Bernhard, F.Z.S.; 16 Alexandra Grove, North Finchley, N.

1889. Tennant, Edward Priaulx; 40 Grosvenor Square, W.; and The Glen, Innerleithen, N.B.

1886. Terry, Major Horace A. (late Oxfordshire Light Infantry); The Lodge, Upper Halliford, Shepperton.

1904. Thompson, Lieut. William R., R.G.A.; Work Point Barracks, Victoria, B. Columbia.

1900. Thorburn, Archibald, F.Z.S.; High Leybourne, Hascombe, near Godalming, Surrey.

360 1893. Thorpe, Dixon L.; Loshville, Etterby Scaur, Carlisle.

1903. Ticehurst, Claud Buchanan; Winstowe, St. Leonards-on-Sea; and St. John's College, Cambridge.

1894. Ticehurst, Norman Frederic, M.A., M.B., F.R.C.S., F.Z.S.; 35 Pevensey Road, St. Leonards-on-Sea.

1902. Townsend, Reginald Gilliat, M.A.; Buckholt, Dean, Salisbury.

1893. Trevor-Battye, Aubyn B. R., F.Z.S.; Chilbolton, Stockbridge, R.S.O., Hants.

365* 1858. Tristram, The Rev. Henry Baker, M.A., LL.D., F.R.S., C.M.Z.S., Canon of Durham; The College, Durham.

1864. Upcher, Henry Morris, F.Z.S.; Sheringham Hall, Norfolk.

1894. Ussher, Richard John; Cappagh House, Cappagh, S.O., Co. Waterford, Ireland.

1890. Venour, Stephen; Fern Bank, Altrincham, Cheshire.

1884. Verey, Alfred Sainsbury; Heronsgate, near Rickmansworth.

370 1881. Verner, Col. William Willoughby Cole; Hartford Bridge, Winchfield, Hants; and United Service Club, S.W.

1902. Wade, Edward Walter; 174 Spring Bank, Hull.

1886. Wade-Dalton, Col. H. D.; Hauxwell Hall, Finghall, R.S.O., Yorkshire.

1895. Wallis, Henry Marriage; Ashton Lodge, Christchurch Road, Reading.

1881. Walsingham, Thomas, Lord, F.R.S., F.Z.S.; Merton Hall, Thetford, Norfolk.

375 1899. Walton, Capt. Herbert James, M.B., F.R.C.S. I.M.S.; c/o Messrs. H. S. King & Co., 9 Pall Mall, S.W.

1872. Wardlaw-Ramsay, Lt.-Col. R. G., F.Z.S.; Whitehill, Rosewell, Midlothian, N.B.

Date of Election.

1896. Watkins, Watkin, F.Z.S.; Highfield, Harrow; and Wellington Club, S.W.

1903. Watt, Hugh Boyd; 3 Willow Mansions, Fortune Green Road, West Hampstead, N.W.

1900. Westell, William Percival; 5 Glenferrie Road, St. Albans, Herts.

380 1891. Whitaker, Benjamin Ingham; Hesley Hall, Tickhill, Rotherham.

1891. Whitaker, Joseph I. S., F.Z.S.; Malfitano, Palermo, Sicily.

1903. White, Stephen Joseph; Oakwood, Crayford, Kent.

1903. Whitehead, Charles Hugh Tempest; Deighton Grove, York; and 1st Durham Light Infantry, 56th Infantry Frontier Force, Kohat, India.

1887. Whitehead, Jeffery, F.Z.S.; Newstead, Wimbledon, Surrey.

385 1904. Whitty, Charles Richard, B.A., M.D.; Minna Lodge, Hunstanton, Norfolk.

1897. Whymper, Charles, F.Z.S.; 7 James Street, Haymarket, S.W.

1898. Wiglesworth, Joseph, M.D., F.R.C.P.; Rainhill, near Liverpool.

1894. Wilkinson, Johnson; St. George's Square, Huddersfield, Yorkshire.

1904. Williams, Major Charles Louis, M.D.; Indian Medical Service; c/o Messrs. Binny & Co., Madras, India.

390 1896. Williams, Capt. Lionel Arthur, F.Z.S.; Isthmian Club, Piccadilly, W.

1897. Wilson, Allan Reid; Easthill, East Bank Road, Sheffield.

1888. Wilson, Charles Joseph; 34 York Terrace, Regent's Park, N.W.

1900. Wilson, Dr. Edward Adrian, F.Z.S.; Tynecote, Bushey, Herts.

1887. Wilson, Scott Barchard, F.Z.S.; Heatherbank, Weybridge Heath, Surrey.

395 1897. Witherby, Harry Forbes, F.Z.S.; 11 Hereford Mansions, Hereford Road, Bayswater, W.

1899. Wollaston, Alexander Frederick Richmond, B.A.; 19 Upper Gloucester Place, Dorset Square, N.W.

1902. Workman, William Hughes; Lismore, Windsor, Belfast.

1875. Wright, Charles A., F.L.S., F.Z.S. (Knight of the Crown of Italy); Kayhough, Kew-Gardens Road, Kew, S.W.

Date of Election.

1871. Wright, E. Perceval, M.D., F.L.S., C.M.Z.S., Professor of Botany in the University of Dublin.

400 1891. Wright, Thomas, M.D.; Castle Place, Nottingham.

1904. Wright, William Crawford; Charlevoix, Marlborough Park, Belfast.

1895. Yerbury, Lt.-Col. John William (late R.A.), F.Z.S.; 8 Duke Street, St. James's, S.W.; and Army and Navy Club, S.W.

1889. Young, Capt. James B., R.N.; Tytherley, Wimborne, Dorset.

1897. Young, John Joseph Baldwin, M.A.; Richmond Park, near Sheffield.

405 1904. Young, Lieut. Martin; 1st York. & Lancaster Regt., Mhow, India.

Extra-Ordinary Members.

1899. Godwin-Austen, Lt.-Col. Henry Haversham, F.R.S., F.Z.S.; Nore, Hascombe, Godalming.

1860. Wallace, Alfred Russel, F.R.S., F.Z.S.; Broadstone, Wimborne, Dorset.

Honorary Members.

1886. Ayres, Thomas; Potchefstroom, Transvaal, South Africa.

1890. Berlepsch, Graf Hans von, C.M.Z.S.; Schloss Berlepsch, Post Gertenbach, Witzenhausen, Germany.

1860. Cabanis, Dr. Jean, C.M.Z.S.; Friedrichshagen, bei Berlin.

1900. Collett, Prof. Robert, F.M.Z.S.; University Museum, Christiania.

5 1870. Finsch, Dr. Otto, C.M.Z.S.; Altewiekring 19ᵉ, Brunswick, Germany.

1894. Giglioli, Dr. Henry Hillyer, F.M.Z.S.; Reale Istituto di Studi Superiori, Florence.

1898. Goeldi, Dr. Emil A., C.M.Z.S.; Director of the Goeldi Museum, Pará, Brazil.

1893. Reichenow, Dr. Anton, C.M.Z.S.; Museum für Naturkunde, Invalidenstrasse, Berlin.

1903. Ridgway, Robert, C.M.Z.S.; Smithsonian Institution, Washington, D.C., U.S.A.

10 1890. Salvadori, Count Tommaso, M.D., F.M.Z.S.; Royal Zoological Museum, Turin.

Colonial Members.

Date of Election.

1904. Campbell, Alfred J.; Custom House, Melbourne, Australia.

1903. Hutton, Capt. Frederick W., F.R.S., C.M.Z.S.; The Museum, Christchurch, New Zealand.

1903. Legge, Col. W. Vincent, F.Z.S.; Cullenswood House, St. Mary's, Tasmania.

1905. Macoun, John, M.A., F.R.S.C.; Naturalist to the Geological Survey of Canada, Ottawa, Canada.

5 1905. Millar, Alfred Duchesne; 298 Smith Street, Durban, Natal.

1903. North, Alfred J., C.M.Z.S.; Australian Museum, Sydney, N.S.W.

Foreign Members.

1890. Allen, Joel Asaph, Ph.D., F.M.Z.S.; American Museum of Natural History, Central Park, New York, U.S.A.

1900. Bianchi, Dr. Valentine; Imperial Zoological Museum, St. Petersburg.

1904. Blasius, Geh. Hofr. Prof. Dr. Wilhelm, C.M.Z.S.; Gauss-Strasse, 17, Brunswick, Germany.

1872. Bocage, Prof. J. V. Barboza du, F.M.Z.S.; Royal Museum, Lisbon.

5 1880. Bureau, Louis, M.D.; École de Médecine, Nantes, France.

1902. Chapman, Frank Michler; American Museum of Natural History, Central Park, New York, U.S.A.

1875. Doria, Marchese Giacomo, F.M.Z.S.; Strada Nuova, 6, Genoa, Italy.

1872. Fatio, Dr. Victor, C.M.Z.S., Geneva.

1902. Ihering, Dr. Herman von, C.M.Z.S.; Museu Paulista, São Paulo, Brazil.

10 1886. Madarász, Dr. Julius von; National Museum, Buda-Pesth.

1903. Martorelli, Dr. Giacinto; Collezione Turati, Museo Civico di Storia Naturale, Milan, Italy.

1894. Menzbier, Prof. Dr. Michael, C.M.Z.S.; Imperial Society of Naturalists, Moscow.

1881. Meyer, Dr. Adolf Bernhard, C.M.Z.S., Director of the Royal Museum, Dresden.

1905. Oberholser, Harry Church; Biological Survey, Department of Agriculture, Washington, D.C., U.S.A.

Date of Election.

15 1890. OUSTALET, Dr. EMILE, C.M.Z.S., Professeur au Muséum d'Histoire Naturelle, Jardin des Plantes, Paris.

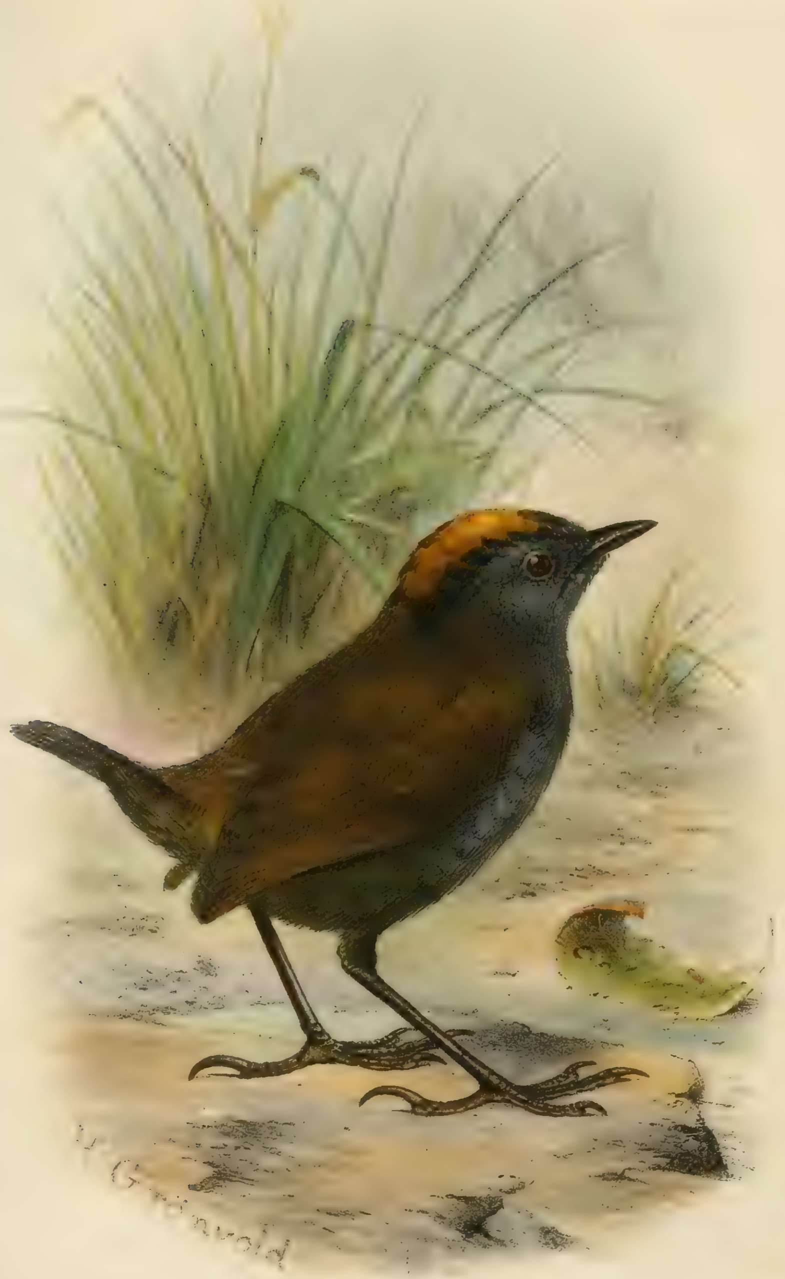
1900. REISER, Dr. OTHMAR; Landes Museum, Sarajevo, Bosnia, Austro-Hungary.

1894. SCHALOW, HERMAN; Flensburgerstrasse, 15, Berlin, N.W. 23.

1900. STEJNEGER, LEONHARD, C.M.Z.S.; Smithsonian Institution, Washington, D.C., U.S.A.

1902. SUSHKIN, Dr. PETER, C.M.Z.S.; Imperial University, Moscow, Russia.

20 1896. WINGE, HERLUF, C.M.Z.S.; University Zoological Museum, Copenhagen.



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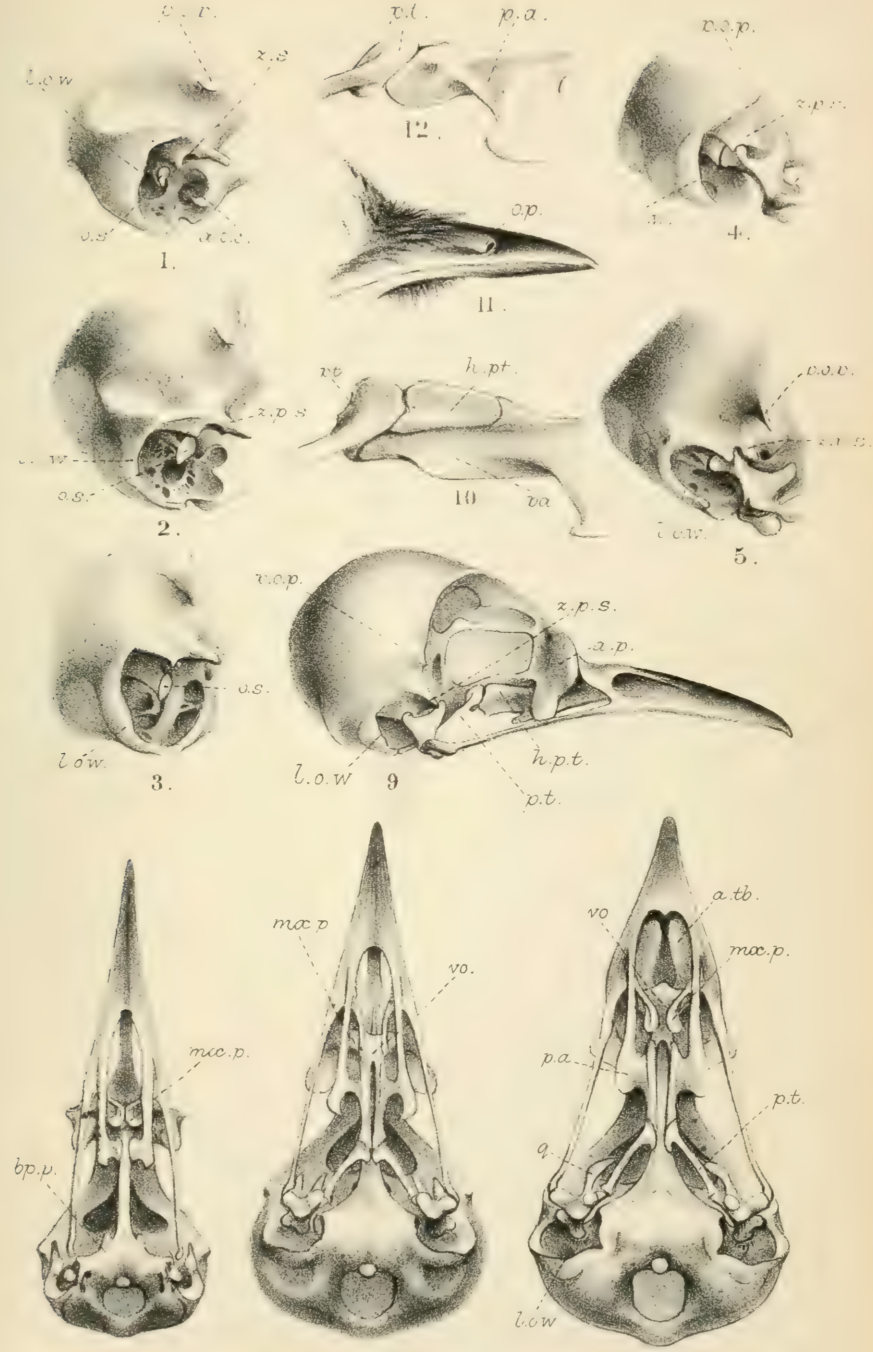
ZELEDONIA CORONATA.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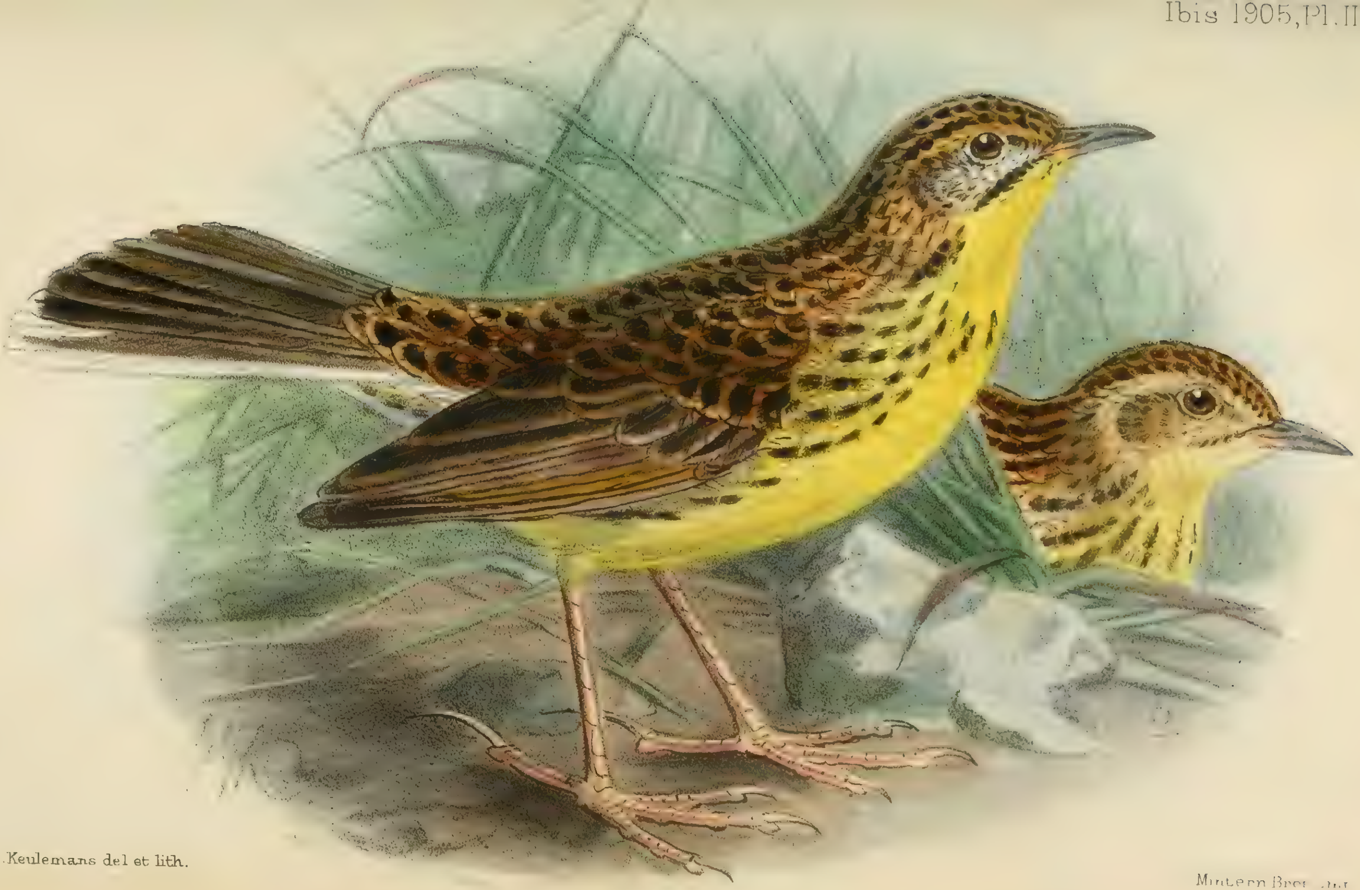
SKULLS OF TURDIFORM PASSERES.

Ibis 1905, Pl. III.



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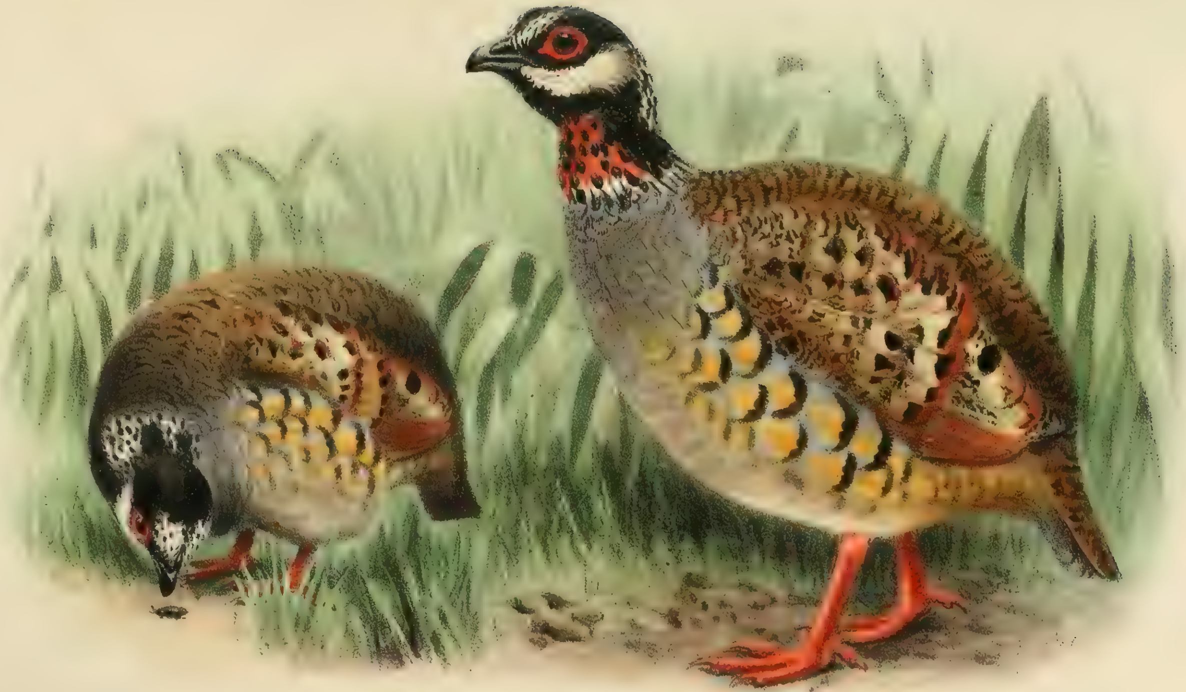
MACRONYX SHARPEI.

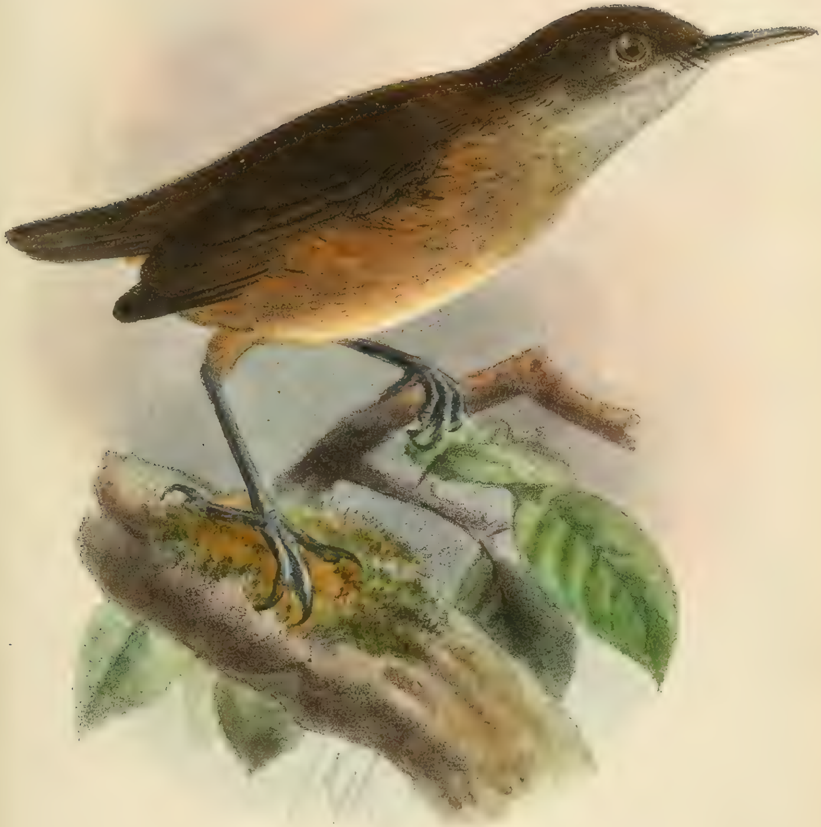
Ibis.1905. Pl. IV.



H. Goodchild del. et lith.

ARBORICOLA CAMPBELLI.

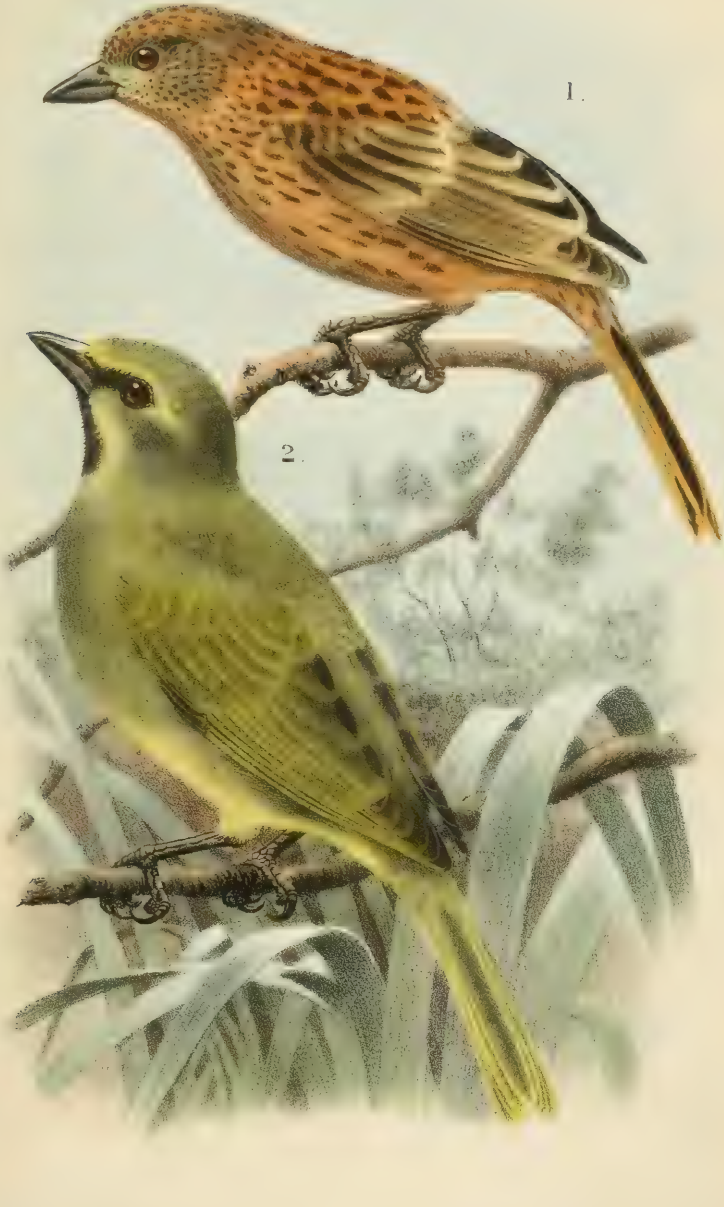
Mintern Bros. imp



J. G. Keulemans del et lith

Mintern Bros imp

AMAUROCICHLA KEMPI.



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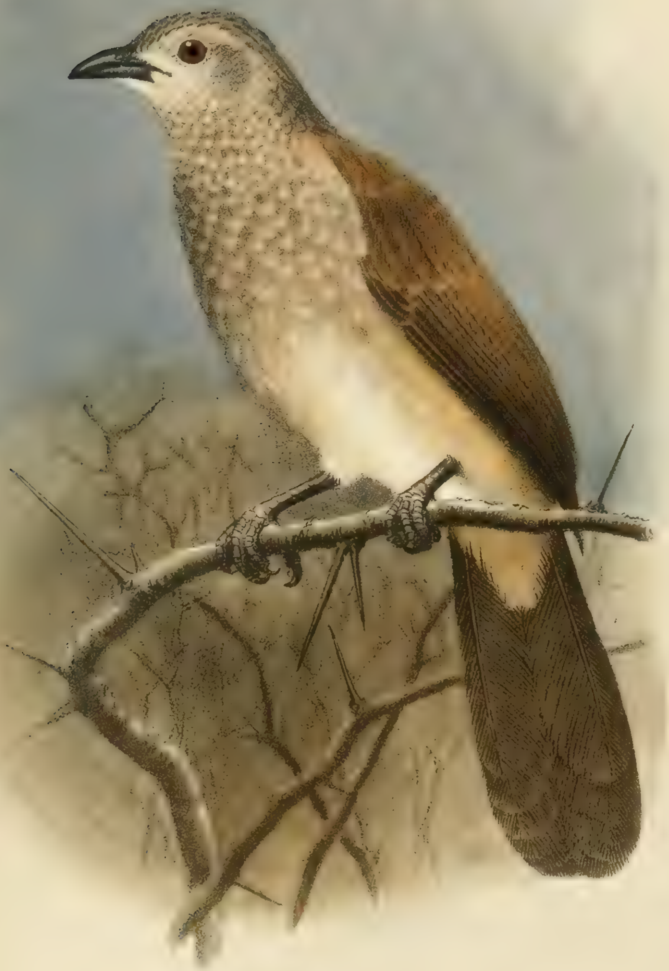
1. NESOSPIZA JESSIÆ. 2. N. GOUGHENSIS.

Ibis 1905 Pl. VII



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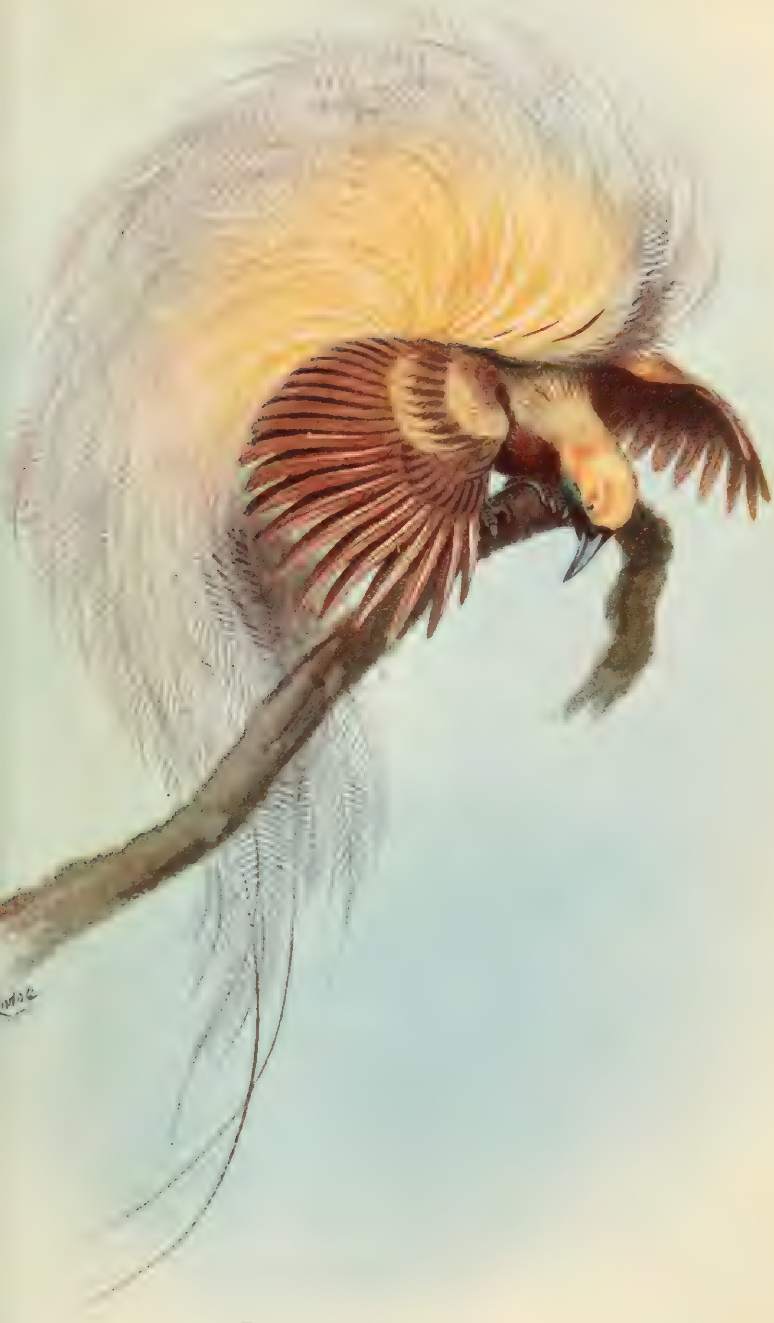
CRATEROPUS CORDOFANICUS.

IBIS. 1905. PL. VIII

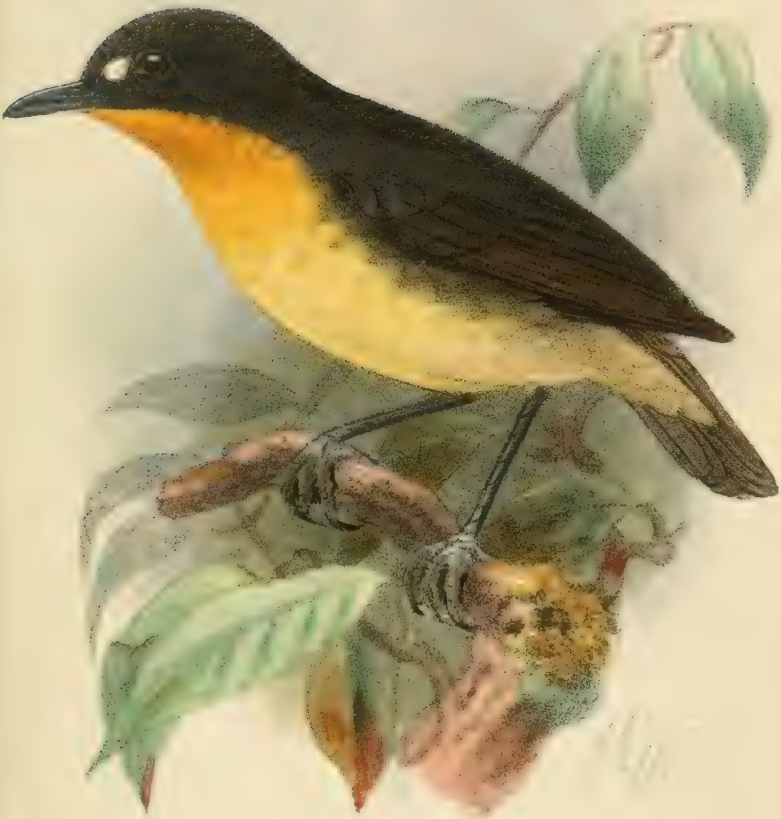


PARADISEA MINOR.

([illegible])

A. C. Fowler, Imp.

Ibis. 1905. Pl. IX.



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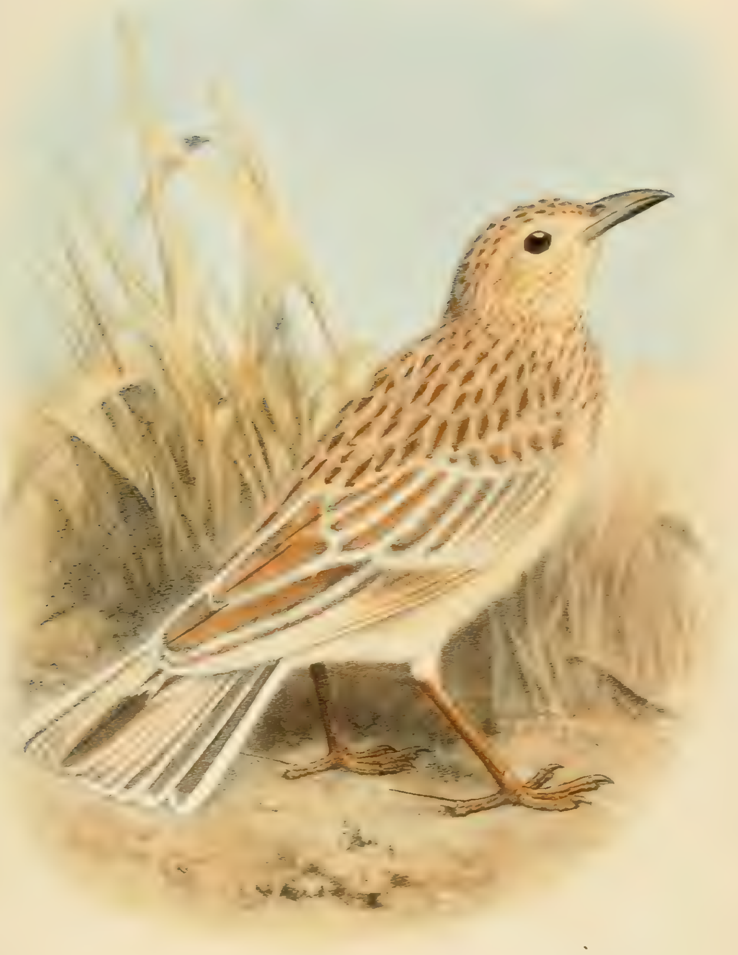
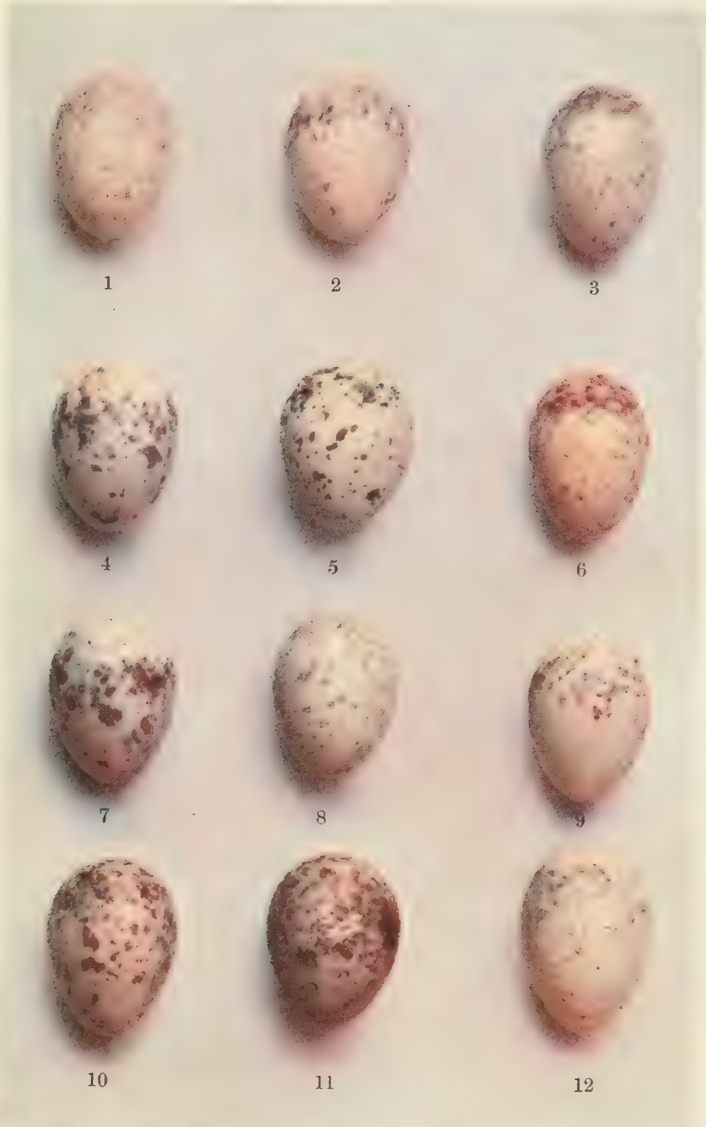
STIPHRORNIS XANTHOGASTER.



CERTHILAUDA [illegible]

Ibis, 1905. Pl. XI.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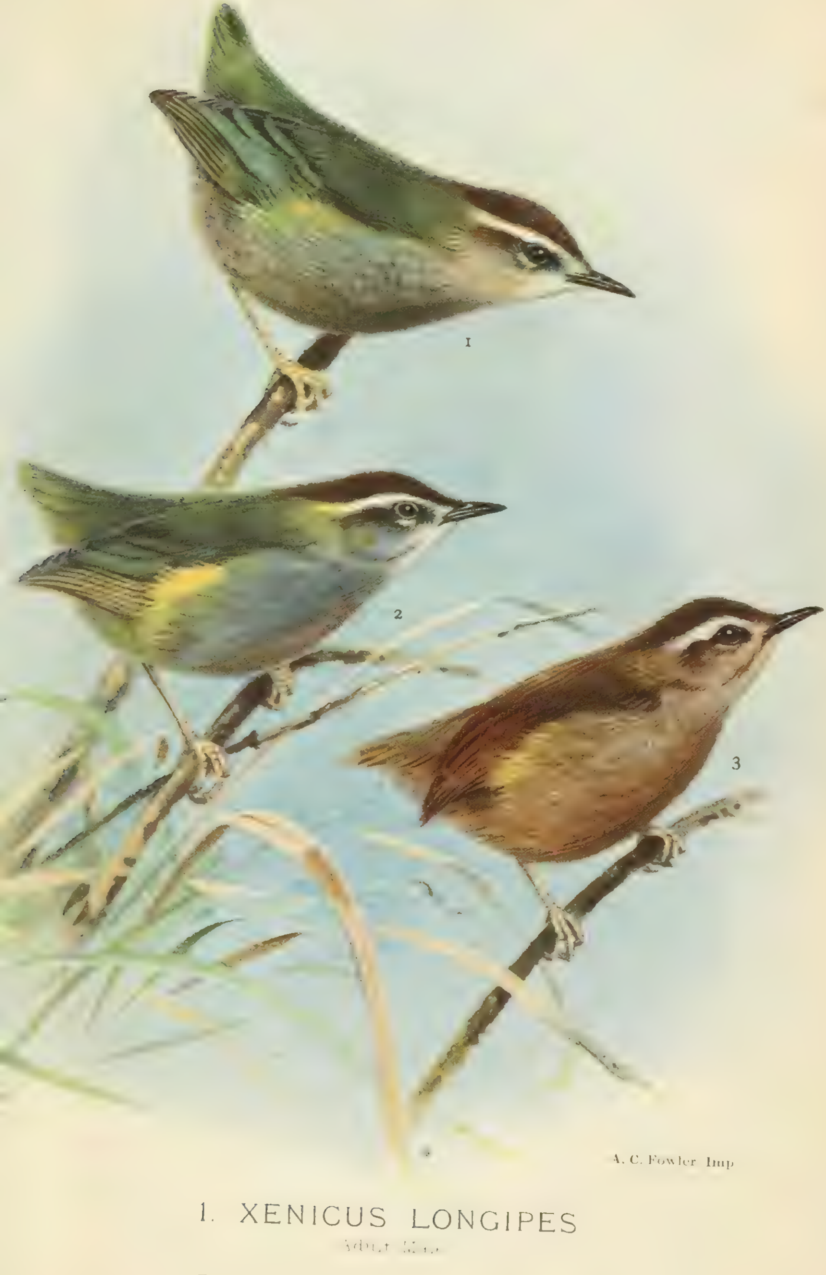
EGGS OF PALÆARCTIC SHRIKES

IBIS. 1905. PL. XII.



A. C. Fowler Imp.

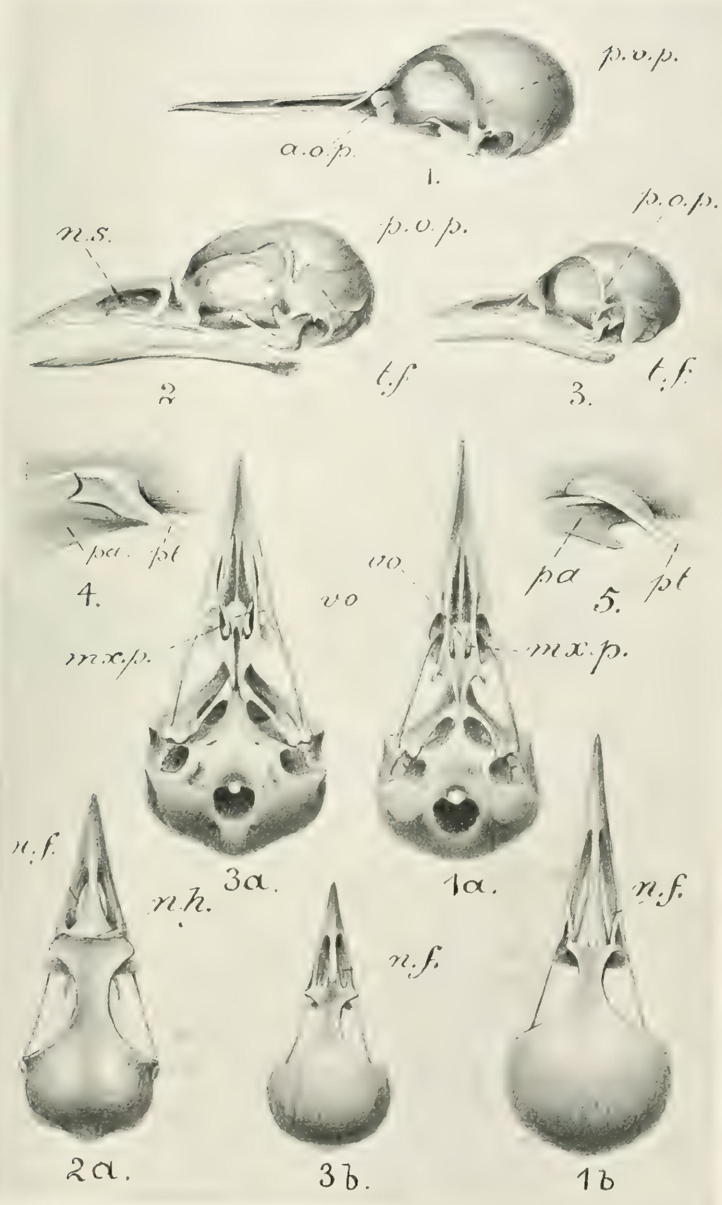
1. XENICUS LONGIPES

Adult Male.

2, 3. XENICUS STOKESI:

(2) Adult Male and (3) Immature (type of the species)

Ibis 1905. Pl. XIII.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n.h.
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n.f.
2a.
3b.
1b

H. Gronvold, del.

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